

# MC

TECHNOLOGY DEPT.

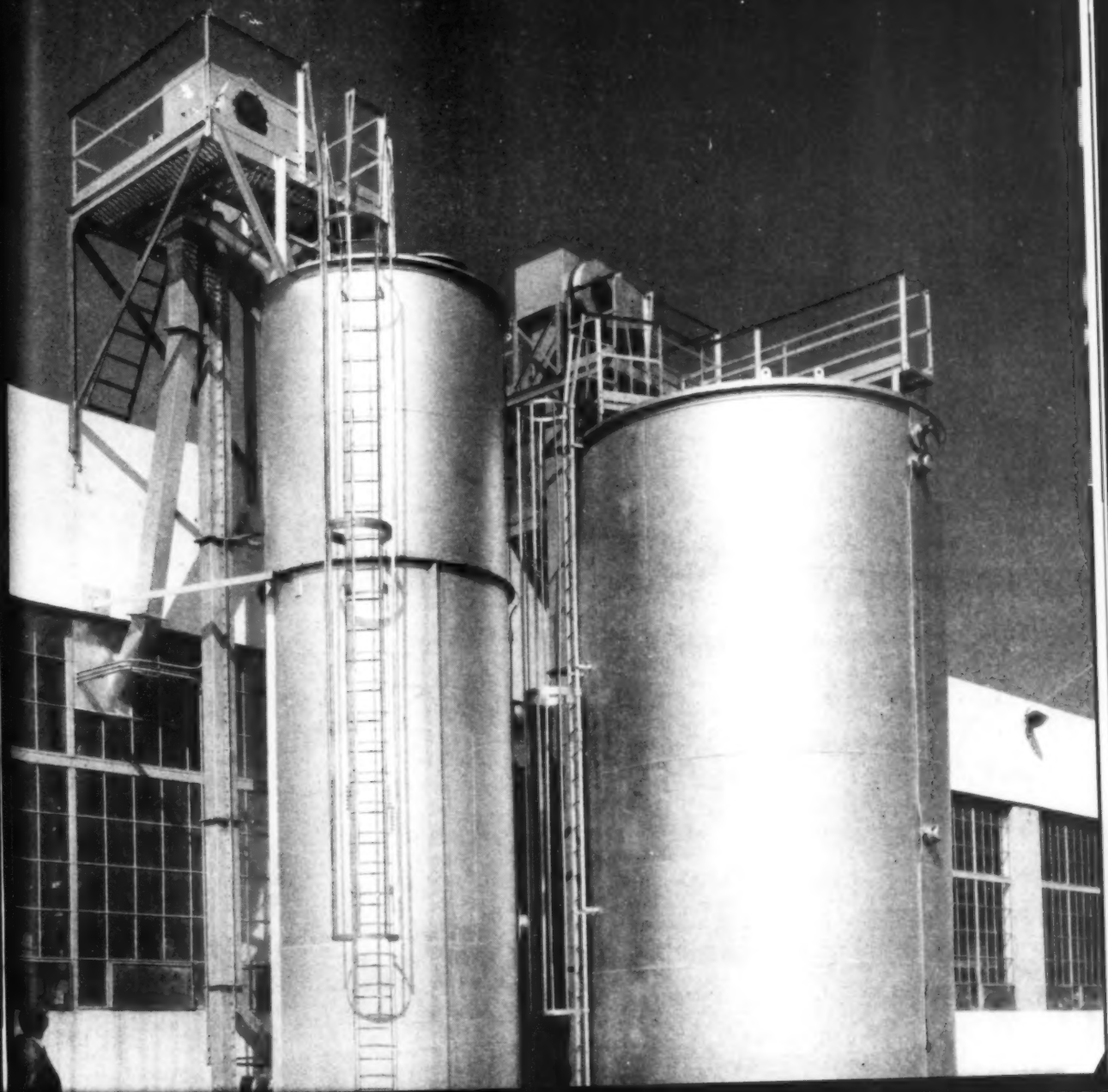
June, 1957

*the Manufacturing Confectioner*

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JUN 1 1 1957

DETROIT 475



# Confectionery Flavors *by*



## **COSMO® FLAVORS** *Alcoholic*

## **CONAX® FLAVORS** *Non-Alcoholic*

COSMO and CONAX are the well-known D&O "sister" flavor lines. Combining universal applicability and complete selection, these all-purpose flavor groups are made from top quality essential oils, aromatic chemicals and selected synthetics. Extremely powerful, and practically free from low boiling ethers, they will withstand high processing temperatures, and can be used in small proportions, thus achieving excellent flavor at low cost. Cosmo flavors employ pure ethyl alcohol as a solvent. Conax Flavors are non-alcoholic. In all other respects these very effective sister lines are the same.

### *Suggested Proportions*

Beverage Syrups	1 oz. to 15 gal.
Fondants & Icings	¼ to ½ oz. to 100 lbs.
Gums and Jellies	1 to 1½ oz. to 100 lbs.
Hard Candies	1 to 2 oz. to 100 lbs.
Ice Cream Flavors	.6 oz. to 1 gal.
Nectar Bases	¼ to ½ oz. per gal.
Pectin Jellies	¼ to ½ oz. to 100 lbs.

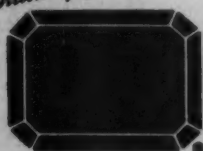
### *Suggested Proportions*

Beverage Syrups	1 oz. to 20 gal.
Fondants	¼ oz. to 100 lbs.
Gums	1 oz. to 100 lbs.
Hard Candies	½ oz. to 100 lbs.
Ice Cream Flavors	.5 oz. to 1 gal.
Nectar Bases	¼ to ½ oz. to 1 gal.
Pectin Jellies	¼ to ½ oz. to 100 lbs.

**MORE THAN 150 FLAVORS AVAILABLE IN EACH LINE**

*Write for Cosmo Brochure and the Flavor Catalog*

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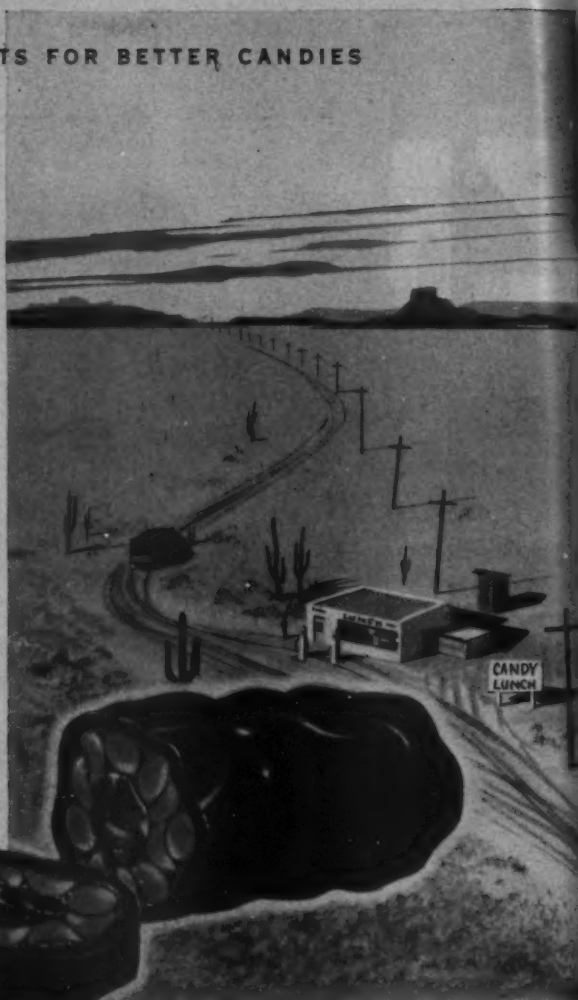
WORLD'S LARGEST SUPPLIERS OF VANILLIN

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BETTER PRODUCTS FOR BETTER CANDIES



**Tropical Humidity!** Bars made with Sweetose held a just-right moisture balance—did not become wet and sticky.



**Desert Aridity!** Bars made with Sweetose kept a perfect moisture balance while others dried out, cracked and discolored.

## Conclusive exposure tests prove Sweetose extends candy shelf life far longer...at lower cost

Narrow humectant range of Staley's enzyme-converted corn syrup increases shelf life—lowers costs! We gave Sweetose "the works" . . . simulating the severest conditions of jungle humidity and desert aridity in our laboratories. The result? As an all-weather humectant, Sweetose proved superior to all other humectants tested.

This means candies made with Sweetose hold an appetizing moisture level through the most extreme variations of humidity and temperature . . . allowing you, Mr. Confectioner, to cash in on a longer shelf life with bigger profits, expanded distribution.

Advantages to be had using this "Cream of Corn Sweeteners" don't stop here. Leading confectioners with plants all over the country depend on Sweetose to improve taste, texture and tenderness in their wares.

With all this, Sweetose has proved economies . . . both in sweetening and in cutting sweetener handling costs. For additional information, call your Staley Representative at the branch nearest you or write today to . . .



**A. E. Staley Mfg. Co., Decatur, Illinois**  
Branch Offices: Atlanta • Boston • Chicago • Cleveland • Kansas City  
New York • Philadelphia • San Francisco • St. Louis

# Sweetose®

CORN SYRUP

# M candy business

Russell Stover Candy Company is planning construction of a new factory and office building in the Kansas City area. Preliminary plans call for 200,000 square feet in the building, of one floor construction and 600 feet long. The largest present factory of the firm is in Lincoln Nebraska. The firm operates more than sixty retail shops in addition to its wholesale business, and maintains three distribution plants in Atlanta, Georgia, Allentown, Pennsylvania and Sacramento, California. A fourth is planned for this year in Dallas.

Fanny Farmer Candy Shops has announced plans for the opening of at least 24 new shops this year. These are planned for suburban and downtown shopping centers.

The Chicago Candy Club has planned its annual golf outing for the Midwest Country Club at Hinsdale, Illinois. Bob Bresnahan and Adolph Stankus are the co-chairmen.

Earl Wilson has been named merchandising manager for Bunte Brothers Chase Candy Company, replacing Wilbur Klint who has joined King Candy Company in a similar capacity.

Samuel Pines president of J. Pines & Sons wholesale tobacco distributor of Chicago, died May 19.

Charles A. Papas and Son, Kentucky candy manufacturer, is planning a new factory in Covington, on the site of the old Covington Brewery.

Edwin T. Leaf and Irving W. Golub, candy brokers in New York Metropolitan area, have joined to form the Golub Leaf Company.

E. J. Brach & Sons, Inc. have added three directors to its board. These are Edwin O. Blomquist, Edward M. Kerwin and Arthur C. Schrier. All are long time employees.



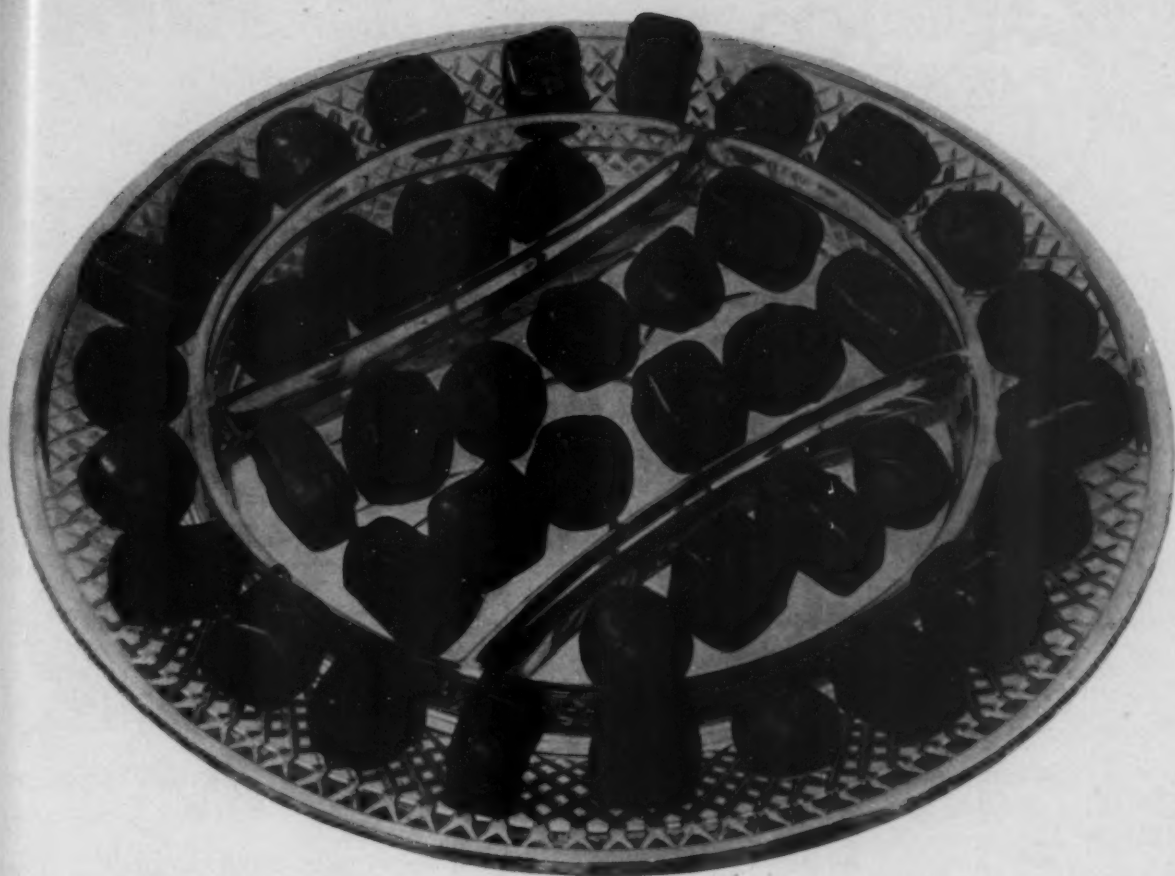
E. J. Brach & Sons has announced a schedule of full color newspaper ads in 33 key markets in addition to their usual magazine advertising.

C. Dale Fox has been named sales manager of The Bianchi Company. The appointment of Fox is part of an intended expansion program which is expected to give the firm national distribution for their 100% liquid center chocolate covered cherries. Fox had been sales manager of Rockwood Chocolate Company.

Plans are as follows for the 34th annual convention of the Southern Wholesale Confectioners Association in New Orleans. The first social activity will be a reception in honor of President and Mrs. E. H. Proffitt, 5:30 Tuesday evening, June 18th. Following this at 6:30 will be the opening of the Trade Show. Business sessions will be scheduled Wednesday and Thursday mornings with "Eye-Opener" breakfasts before these meetings. In addition to Tuesday evening, the Trade Show will be open Wednesday and Thursday afternoons and Friday morning.

Wednesday evening features the Hospitality Party sponsored by the Southern Salesmen's Candy Club. The annual banquet and dance is planned for Friday evening. Southern Salesmen's Candy Club will hold their annual meeting Tuesday, June 18th.

Walter H. Kansteiner Company has created a new division devoted to the importation and sale of European standard and specialized confectionery equipment. Heading the list is the A. E. Neilsen Company of Copenhagen, manufacturers of coaters, extruders, marshmallow depositors and tempering kettles. Also represented on a national scale is the Turner Automatic Machinery Co. of England, makers of automatic high speed forming and wrapping equipment, and Loesch G. m. b. H., manufacturers of chocolate molding and wrapping equipment. Gerard B. Ziffer with ten years experience in confectioner machinery, is the manager of this division.



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**Quality** *Chocolate Coatings*

Choose from a complete selection of Milks, Vanillas, Bitter Sweets, or Fondant type "Chocolate Coatings."

You can be assured that all Ambrosia Coatings are made to the food of the gods quality standards of velvety smoothness, rich chocolate flavor, easy workability, and glossy finish. Ambrosia Chocolate Coatings are the quality complement to your fine candies.

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Milwaukee 3, Wisconsin

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## IT'S GOT EVERYBODY TALKING . . . .

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yummy flavors that make candies  
just melt in your mouth they're so good.

Sure, there's nothing quite like them to help your candy sales climb sky-high!

What *are* these flavors?

They're not *single* flavors . . . they're *combinations* like ORANGE-RUM,  
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good qualities one with the other to produce fuller, more appealing,  
more distinctive effects. If you'd like to know more about them —

if you'd like to sample them — just drop our Flavor Division  
a line saying you'd like to try those delicious

new COMBINATION FLAVORS you saw advertised  
in this publication. They're excellent in  
hard candies, pectin jellies, chocolate  
covered creams and sandwich cream fillings.



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# the Manufacturing Confectioner

with International Confectioner

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June 1957

Volume XXXVII—Number 6

Edited and Published in Chicago

The Candy Manufacturing Center of the World



### Master batching at Tuxedo Candy Company

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**COVER:** These bulk sugar tanks at the Tuxedo Candy Company are the first step in the automatic distribution of sugar throughout the factory via a master batch system. Story begins on page 29.

Founder—Earl R. Allured	Publisher—P. W. Allured
Editor—Stanley E. Allured	Consulting Editor—Thomas F. Sullivan
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## CONFECTIONERY ANALYSIS and COMPOSITION

By

Stroud Jordan, M.S., Ph.D.

and

Katheryn E. Langwill, M.S., Ph.D.

This volume, first published in 1946, is still the only published reference work on the subject of confectionery analysis. The pioneering work done by Dr. Jordan remains the standard in the field, making a second printing of his book necessary. This printing is in all respects identical to the first printing.

In assembling this volume reference is made to applicable methods. Where satisfactory methods of analysis are of general knowledge they are incorporated by reference. All specially developed methods and procedures are incorporated in detail.

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for June 1957 - 9

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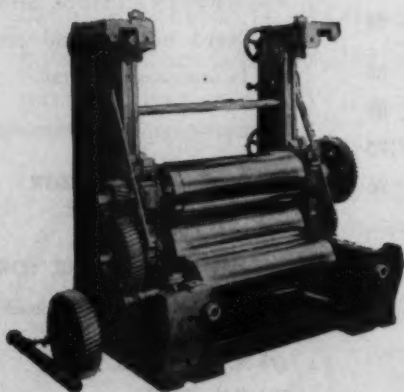
## THREE WAYS TO CUT PRODUCTION COSTS

*... thru increased efficiency, better process control*

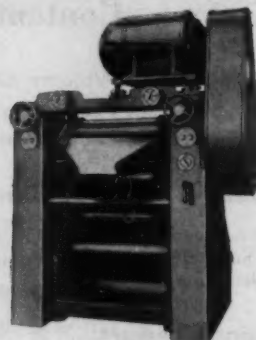
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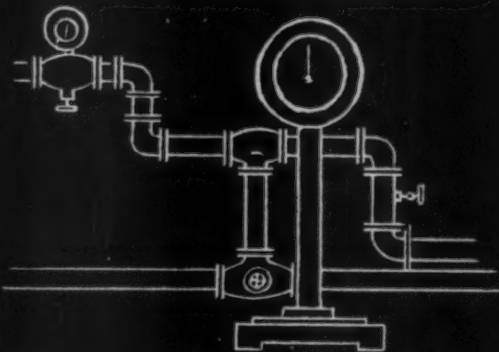
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Residue on Ignition . . . . .	Max. 0.02%
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pH . . . . .	6.0-7.5
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(at 25°/25°) . . . . .	1.285-1.305
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Nickel . . . . .	Max. 0.0005%

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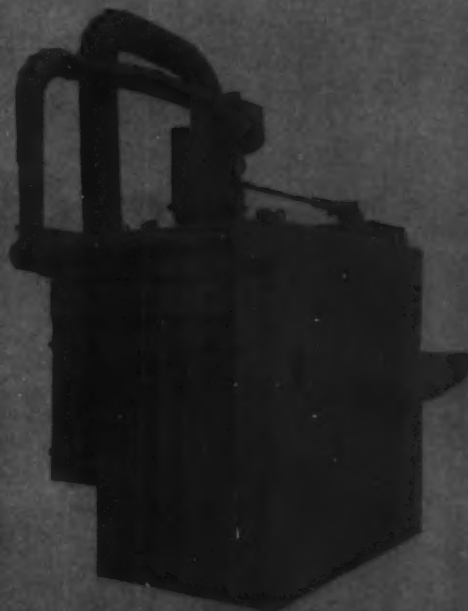
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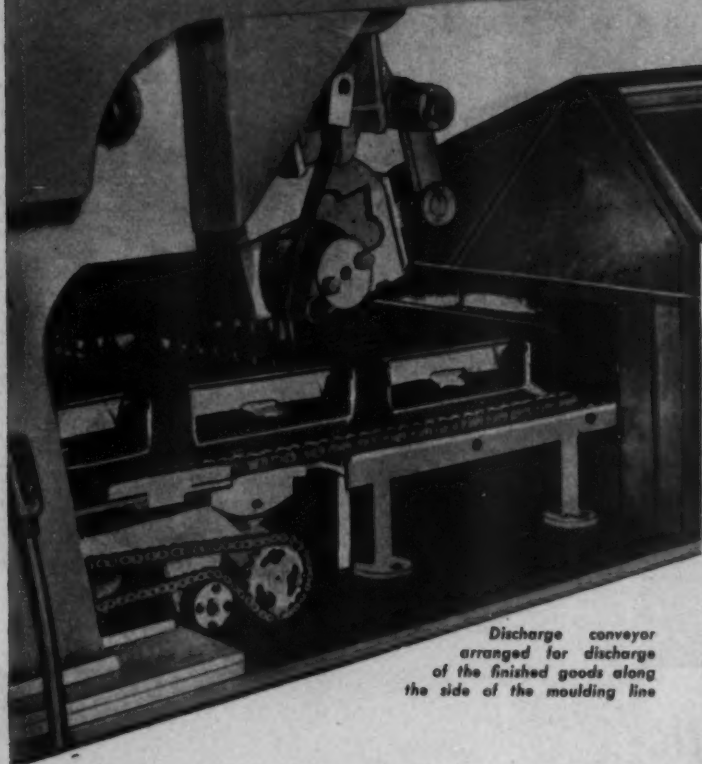
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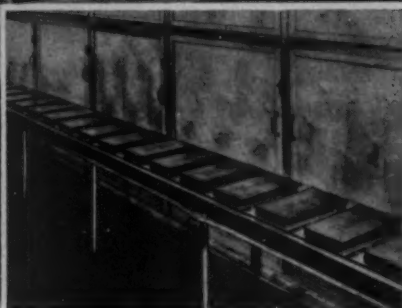
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arranged for discharge  
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Candies reach the height of quality in Nestlé Icecap Couvertures. Most appetizing in their bright pastel looks, their pleasing, delicious flavor is more than a match for their appearance. Nestlé Icecap flavor is different and mellow, while texture is smooth and fine. Its melt-away is so superior it "eats like ice cream."

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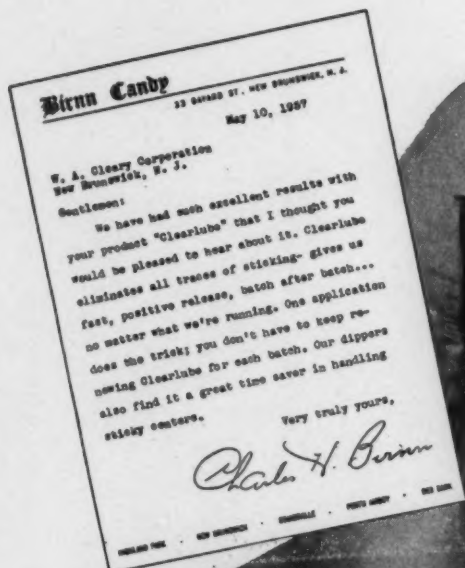
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Icecap  
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especially  
fine for  
fresh  
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# "One application does the trick—



## Birnn Candy

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May 10, 1937

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*Charlie H. Birnn*

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eliminates all traces of sticking—gives us fast, positive release, batch after batch—no matter what we're running."

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*throughout the world.*

AUTOMOLDAS are available  
for bars and other *solid chocolates*,  
for *shell goods*, for *hollow figures*,  
or for *combination* operations.

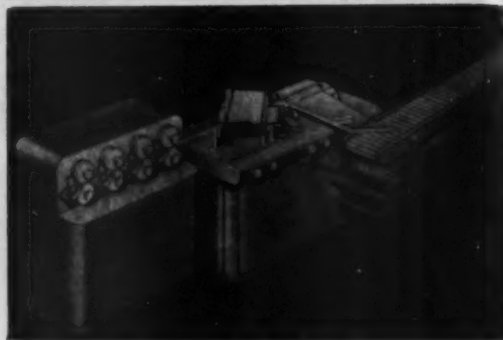
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ENGINEERS

SOLE REPRESENTATIVES IN THE U. S. FOR A. SAVY, JEANJEAN & CIE.



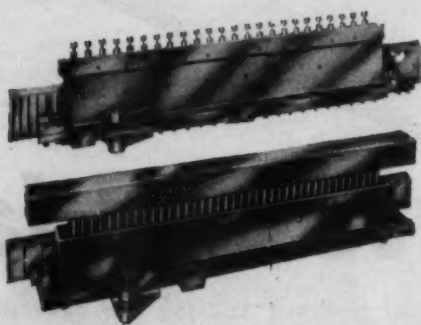
#### **Berks Hard Candy Batch Mixer**

Incorporates color, flavor and acid along with up to 10% Scrap.  
Handles batches up to 135 lbs., at rate of 10 batches per hour. Ready for your forming equipment right from the mixer.



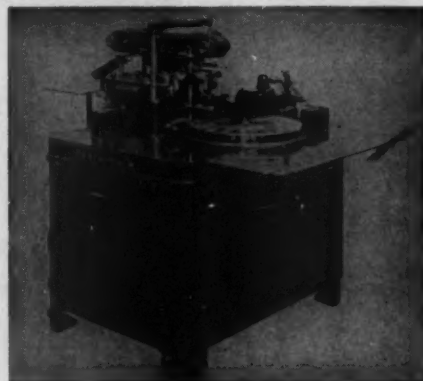
#### **M.F.P. Stick-Master patent pending**

New Style—Twister, Cutter & Straightener  
Flexible—satisfies all lengths and diameters  
Productive—Up to 1200 inches per minute  
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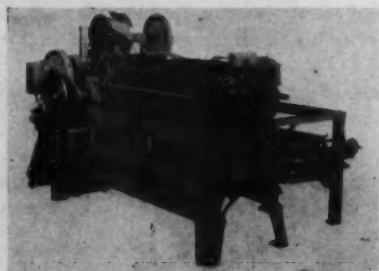
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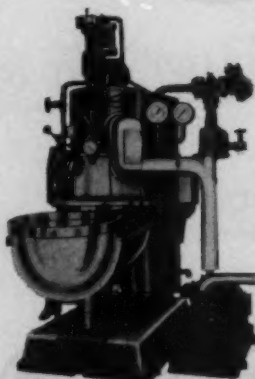
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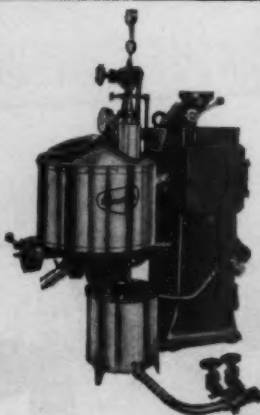
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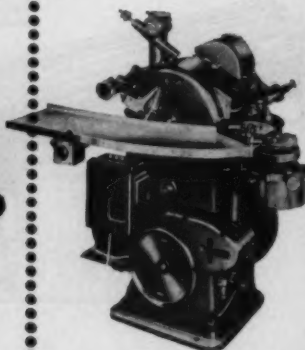
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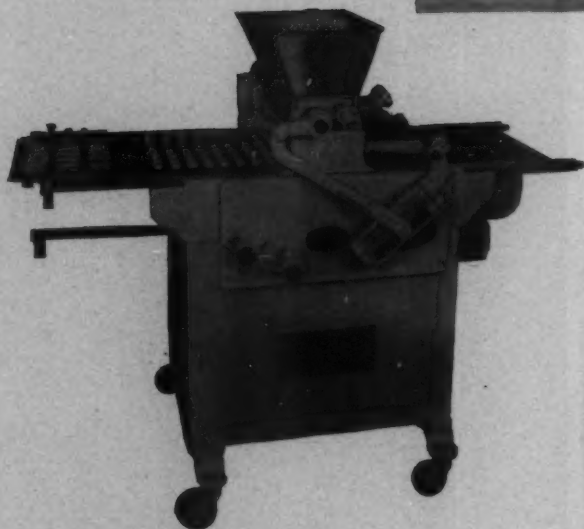
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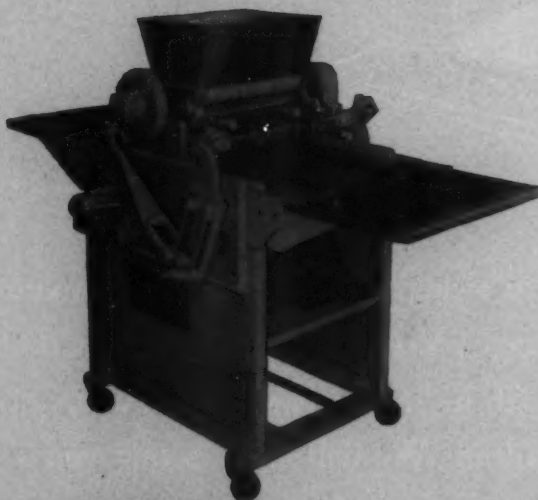
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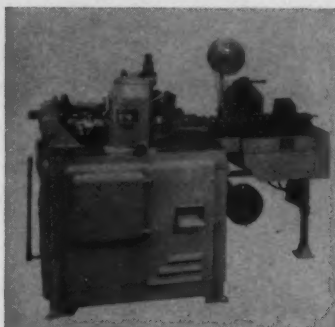
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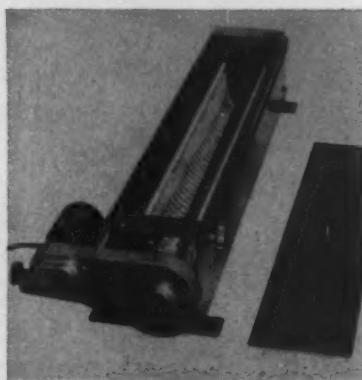


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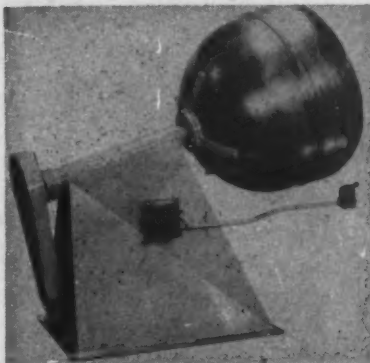
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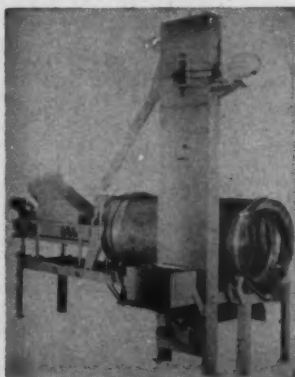
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## "Master batching"... at Tuxedo

by STANLEY ALLURED  
The Manufacturing Confectioner

A very significant innovation was made when Tuxedo Candy Company installed a master mix ingredient system for their entire general line of candies a few years ago. While master mix operations have been rather common for bar and specialty manufacturers for some years, this adaption of it to the diverse requirements of a wide range of candies opens the door to even more extensive cost savings and control than in the specialty houses.

Walter Schoendorf, formerly chemist and now production manager of Tuxedo, worked out the master mix system. The requirements were: (1) that the master mix be adaptable to all departments, with a minimum amount of adjusting at the department level, (2) that the composition of the mix be far more accurately controlled than in a system of formulation at the department level, and (3) that the standards of color, inversion, etc., be at least as high as that required in the most critical department.

The economic value of the master mix included the economies of pumping sugar throughout the plant rather than handling in bags or some type of separate mechanical system. The combination of sugar and corn syrup in the master mix cut the amount of raw material distribution facilities in half, and at the same time reduced the chance for errors in measurement in proportioning these two major ingredients by the same amount.

The advantage accruing from the more accu-

rate formulation of these two prime ingredients in a master mix system provides dividends in the form of closer control of costs and quality in finished goods. A further economy of the master mix system is the reduced time of batch make up in the departments. By measuring in both sugar and corn syrup at one time, minutes are saved in the non-productive time between batches.

The five main production departments that the master mix had to be adapted to were; cream, hard candy, starch gum, marshmallow and nougat. The formulas for each of these departments had to be adjusted to take the master mix, preferably with the minimum of change at the department level.

The maximum moisture content of the syrup was limited by the starch department, which required 80% solids for economic operation. This then was set as the content of the syrup.

The proportions of sugar and syrup presented a greater problem, for each department had been using a different proportion, and adjustments had to be made in formulation on each piece to bring them to a common basic syrup composition. After a good deal of experimentation with the different formulas, and testing different combinations of sugar and syrup, it was determined that the most adaptable combination would be a 60% sugar and 40% corn syrup master mix. Its use in each department is as follows.

This syrup proportion was just right, without



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further additions, of either sugar or corn syrup, for the hard candy, marshmallow and nougat departments. Enough formula adjustment was made to make this possible.

The starch gum department required a higher percentage of corn syrup, so syrup was piped to the kettles in this department, and the master mix adjusted in that fashion for their requirements. Since corn syrup is the easiest ingredient to distribute throughout the plant, this addition to the master mix was no great drawback to the system.

The cream department, however, required a higher percentage of sugar. This was accomplished in the easiest fashion by adjusting the processing to use a bob syrup of the master mix proportions and the use of a high sugar fondant to bring the sugar proportion up to the required amount. Since the cream department is the only major candy making area that required additional sugar, it is placed in the building next to the bulk sugar installation.

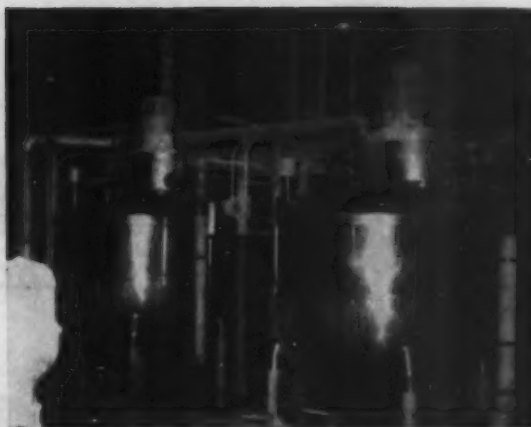
Corn Syrup arrives at the Tuxedo plant in tank cans, and sugar in bulk sugar trucks. Two types of sugar are used at Tuxedo, and are stored in two large outside bulk sugar tanks. A large crystal sugar is used in the master mix system. For dry use, such as in panning, a regular crystal sugar is used, and is kept in a separate tank.

Sugar for the master mix is brought in as needed directly to a weigh hopper which feeds the mixing tank. Corn syrup is pumped in through a meter. The buffering agent is then added and the mix heated to 160° to thoroughly dissolve the sugar and pasteurize the mix. After the cook has been completed, the lab is notified and tests are made of the mix before it is released for candy-making. Tests are made on each batch of master mix for composition, color, inversion, and granulation. Only after these have been made is the batch released to the mix holding tank. The mix kettle is rather unusual in construction. In order to make up mix according to demand, two different sized batches are made, 15,000 pounds and 30,000 pounds. In order to keep the batch from burning on the edges, the steam jacket is divided into two sections. The lower one covers the bottom one third of the kettle, and is used alone for the smaller batch. When cooking the larger batch, the upper part of the steam jacket covering the middle third of the kettle is used in addition to the lower part.

The master mix is kept circulating through a loop of pipe in the plant, from which radials of up to forty feet feed the various departments. The primary reason for the circulation is to remove any possibility of settling from occurring in the mix holding tank.

The mix holding tank is kept at 125° and all lines in the mix circulating loop and radials are also kept at 125° by electric resistance wiring and temperature controls.

The one real problem of this master mix system was in keeping the mix at 80% solids and 125° without appreciable inversion and color formation. In fact, in the opinion of well informed persons consulted on this problem, this type of



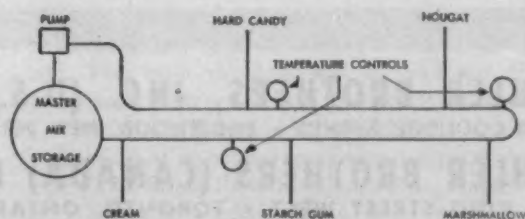
The insulated master mix lines can be seen feeding these kettles. Since meters were not found accurate enough on the master mix, quantities are measured by means of stainless steel rods, or scored kettle sides.

master mix system could not be done in practice because of this problem. The primary factor in solution of this problem was the use of a buffering agent which controlled both color and inversion for a long enough period for the purpose of this system. Another thing which was absolutely required was very close inspection and rigid specifications for both sugar and corn syrup. This is the only candy company that we know of who tests every car of corn syrup for D. E. Baume, pH and clarity. One time that this testing procedure paid off recently was when a car of 54 D. E. syrup was spotted on their siding by mistake. Sugar is also closely controlled.

Each batch of sugar, before being unloaded into the plant, must be tested for Sacarimetry, color, ash, and alkalinity of ash. A candy test is also made to check for strength of the sugar. Sugar is rejected every once in a while because it does not meet these specifications. It has been determined that the rigid requirements on these raw materials is absolutely essential for the successful operation of this master mix system.

A good indication of the stability of this mix is the fact that on one occasion the mix stood in the lines from Thursday night to Tuesday morning, and still remained within the control limits on both color and inversion.

This development of a master mix system for the widely differing requirements of a general line manufacturer is a major step forward in candy technology.

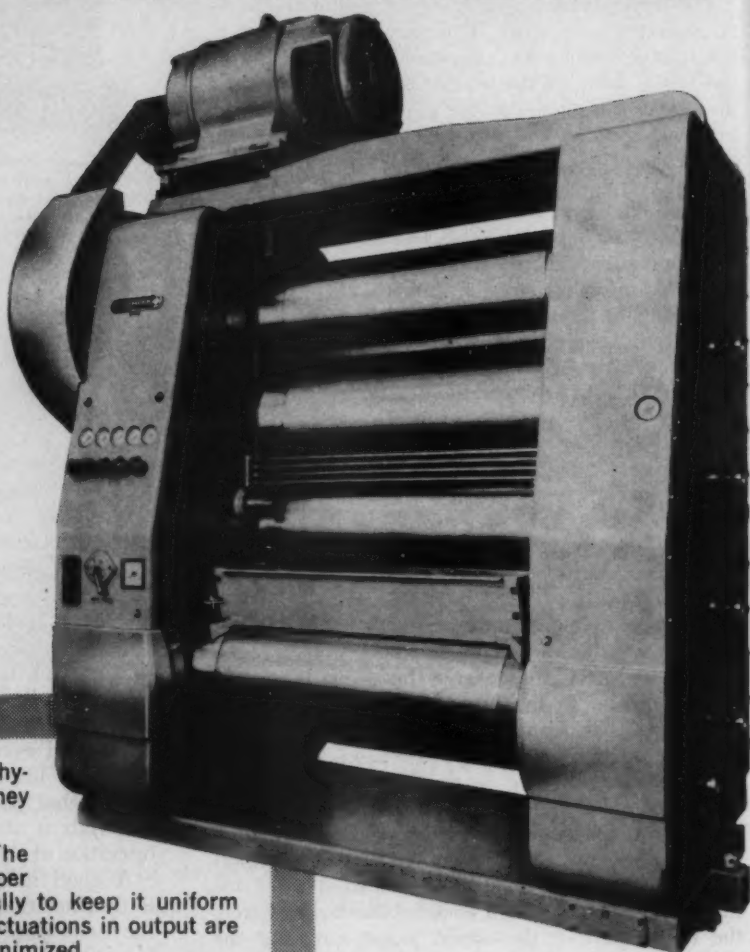




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This conference, which seems to get better each year, is covered in greater detail than ever before in this magazine. Twelve of the seventeen papers given are published in full, as noted below.

## PMCA production conference reports

**M**ost of the papers read at the Production Conference of the Pennsylvania Manufacturing Confectioners Association will be published in full, in either the May, June or July issues of this magazine. Due to a shortage of space, however, five papers have been condensed.

The full schedule of papers follows:

**A study of the action of sorbitan monostearate on chocolate**, by William N. Duck, to be published in full in the July issue.

**Frozen Candy**, by Herbert Knechtel. Published in May, 1957, beginning on page 17.

**Low temperature storage of candies**, by J. G. Woodroof. Published in full, beginning on page 47.

**Proper storage of candies**, by H. B. Cosler. Published in full, beginning on page 37.

**Modern air conditioning can economically produce any results desired by candy manufacturers**, by F. M. Johnson. Condensed, beginning on page 33.

**Viscosity instrumentation**, by Wendell S. Young. Condensed, beginning on page 35.

**A new approach to the use of liquid sugar in the confectionery industry**, by D. V. Wadsworth. To be published in full in July, 1957.

**Use of pure food gelatine in the candy industry**, by W. F. Bronson. To be published in full in July, 1957.

**Aeration in candy technology**, by J. J. Alikonis. Published in full, May 1957, page 35.

**A new method for moisture determination in confections**, by Thomas F. Conway. Published in full, May 1957, page 27.

**The production of choice peppermint and spearmint oils in the United States**, by Winship A. Todd. Condensed, beginning on page 35.

**New dairy solids for the confectionery industry**, by J. Reger. Published in full, beginning on page 77.

**Chocolate engrossing and polishing**, by Charles Carilli. Condensed, beginning on page 35.

**Hot and cold pan work and polishing**, by R. H. Williams, condensed, beginning on page 36.

**The use of chocolate as a flavor**, by Norman W. Kempf. Published in full, beginning on page 85.

**Trends and results of chocolate research in Germany**, by Dr. R. Heiss. To be published in full in July, 1957.

**Factors that influence cast cream center characteristics**, by James A. King. To be published in full in July, 1957.

**Modern Air Conditioning Can Economically Produce Any Results Desired by Candy Manufacturers**, F. M. Johnson, Surface Combustion Corp.

The last few years have provided many developments in air conditioning equipment. Today, practically any humidity desired can be comparatively easily obtained without expensive reheat and temperatures of 32 F. or below no longer are difficult problems.

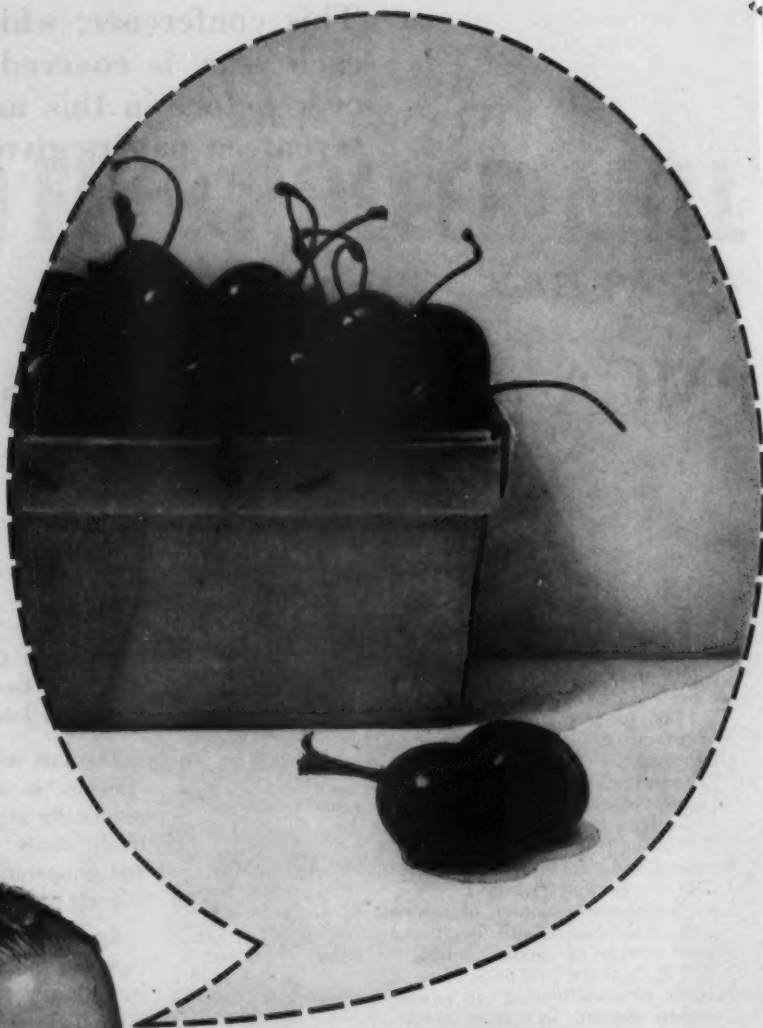
By taking advantage of new methods, it is now practical for the manufacturer to simply state the conditions he wants to maintain and the air conditioning engineer can accurately and simply supply these conditions.

Flow charts and data were presented for such typical installations as: (1) Hard candy manufacturing space maintained at 75 F. and 30% R. H.; (2) Working space maintained at 78 F. and 45% R. H.; (3) Hard candy packaging maintained at 70 F. and 40% R. H.; and (4) Candy storage maintained at 50 F. and 35 or 50 R. H.

A most interesting problem concerned the supplying of air without frost at zero degrees F and two grains per pound (moisture) for the manufacturing of nougat centers in continuous tunnels in the processing of candy bars. This large installation involved the treatment of over a quarter of a million cubic feet/minute of air. This installation has been in operation for nine years and there has never been any need to defrost a coil in the system. The main problem was to cool the alloy continuous belts on which the candy is spread. The solution in the humidity conditioners is cooled with brine at a normal operating temperature of -10 F. At times, these installations have operated at -15 F. with a -25 F. brine.

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## New Environmental Factors in Peppermint Oil Quality, Winship A. Todd, A. M. Todd Co.

Oil of peppermint is the most important single essential oil in the flavor field. Its popularity is worldwide—and growing. This country produced last year about 2,100,000 pounds compared to 860,000 pounds in 1939, the last "normal" year before the war. Exports for 1956 were about 700,000 pounds, nearly double those of 1939. This expansion in production may be attributed to a worldwide preference for the quality of peppermint oil produced here.

Ever since the last half of the last century when the mint growing industry became firmly established here, a great deal of attention has been devoted to those factors which affect the flavor quality of the oil. Quality factors considered during the early years of oil production consisted mainly of the botanical nature of plants and the proportion in which the major constituents, menthol, menthone and ester were present. These factors became stabilized: Then oil quality became largely a matter of keeping fields free from weeds and grass. Weedy peppermint oil cannot be made choice.

During the war and in the years since, substantial production of peppermint oil has arisen in Oregon and Washington. Agricultural and environmental conditions there are quite different from those of the Midwest. Oil derived from the Willamette Valley west of the Cascades proved generally acceptable to discriminating consumers. East of the Cascades, in the Yakima Valley of Washington, an inferior oil was produced. Because the area produced extremely high yields per acre consumer interest was aroused. A number of investigations were made towards improving the quality of the oil. Through research, optimum conditions for plant growth necessary to produce a good quality oil were discovered. Cool nights with temperatures of 45 F. or below during the growing season were found essential. Areas at elevations where the night-time temperatures were satisfactory were found and growers interested in peppermint culture. Oil produced is acceptable both on flavor quality and stability and equal to that produced in the Willamette Valley. Fundamental research has opened the door to the production of choice peppermint oil in the desert region of the West.

## Chocolate Panning, Charles Carilli, Edgar P. Lewis & Sons Inc.

The minimum equipment needed for chocolate panning is eight engrossing pans, eight polishing pans with ribs, a good chocolate spraying system, chocolate kettles, an air compressor and a hot water tank with a circulator. The room temperature should be between 45 and 50 F. The air blowing into the pans which are equipped with six inch metal ducts should be at 35 F and 30% R. H. with a velocity of 2000 ft/min.

The centers should be prepared for the chocolate by dampening with a simple syrup and drying

with fine fruit sugar or a combination of two parts 5X powdered sugar and one part cocoa powder.

The temperature of the dark chocolate should be maintained at between 99 and 100 F. and that of the milk chocolate between 95 and 96 F. in order to flow freely to the sprayers.

After the required amount of chocolate is sprayed on the centers, the candies are transferred to the polishing pans and are polished with small wettings of a solution made by dissolving 36 pounds of powdered gum arabic in three gallons of boiling water and adding two pounds of corn syrup. For each 200 pounds of goods, six three-ounce wettings should be sufficient to attain a brilliant dry lustre, after which three-ounces of candy lacquer is applied. As soon as the candies are dried, they are ready to pack.

The individual revolving pan seems as obsolete as the old-fashioned hand casting funnel. Would it not be possible to have a long, air controlled, rotating, cylindrical drum equipped with chocolate sprayers so that centers would enter at one end and emerge at the other end, chocolate covered and polished, all ready to pack? Chocolate panning technique needs to be revolutionized.

## Viscosity Instrumentation, Wendell S. Young, The Foxboro Co.

For years, viscosity has been one of the most important measurements used in quality control food laboratories. But when control is based on periodically removing samples for checks, the measurements are subject to error due to changing temperature conditions and other variables affecting viscosity. Also the checks are infrequent because of the time and personnel required. And by the time the results of laboratory measurements are available, the viscosity of the product in process may have changed so that any correction indicated no longer applies.

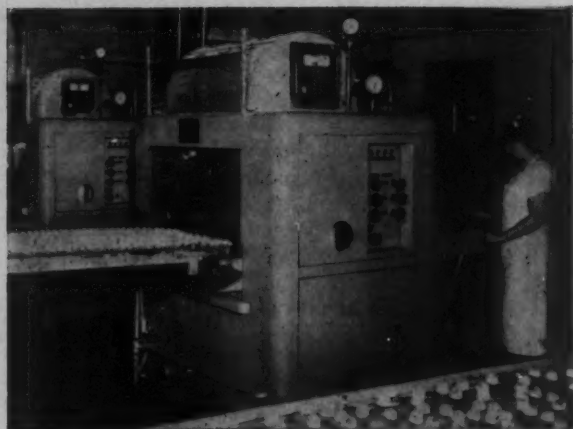
A recent development has been the measuring and recording of viscosity at any point in the process directly, automatically, and continuously. The readings may be directly related to finished product characteristics as consistency or indirectly to total solids and moisture content. Continuous viscosity measurement is useful in predicting the covering power of coatings like marshmallow and chocolate, and in determining the total solids in syrups, honey and molasses.

Viscosity is the measurement of a fluid's internal friction. The force of friction can be thought of as the energy required to move an object that rubs on another. A highly viscous material is one possessing a great deal of internal friction—it will not pour or spread as easily as a material of lower viscosity.

Temperature must be considered when making viscosity measurements. Practically all fluids will become thinner as their temperature increases, and thicker as they cool. The temperature of a material should always be specified along with its viscosity.

Through the installation of the Brookfield Viscometran Transmitter and the Foxboro Dynalog





## *How to get* **UNIFORM CHOCOLATE COATING EVERY TIME**

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The temperature sensitive element of the Indicating Controller is placed in the chocolate at nearest point to outlet to control temperature of heating medium in heat exchanger. Valves are operated by the air output pressure from the instrument, and regulate steam and water to keep a definite temperature.

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*Instruments for indicating, recording and controlling  
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***Taylor Instruments***  
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Recorder on lines or kettles, continuous measurements of viscosity and temperature can be obtained with accuracy equal or superior to laboratory results. The Viscometran may be modified to produce essentially the same rate of shear as the MacMichael Viscometer. With these modifications the Viscometran readings closely correlate those of the MacMichael.

**Pan Production, R. H. Williams, DeWitt P. Henry Co.**

Pan processing is the least talked about subject in the confectionery industry today. It should not be omitted from discussions of candy operations. It is by no means a thing of the past but it is the type of operation that will not readily lend itself to an automatic operation as most of the other candy operations will.

It is a well known fact that there are very few all-around pan men left in the industry. Most manufacturers are not training their men in all phases of pan work. Most men know one operation only—engrossing in hot or cold pans or polishing. Without training, adequate pan personnel will not be available.

Manufacturers who plan to install a pan operation should obtain the proper information from experienced sources before purchasing any equipment. It is important to have three polishing pans and two finishing pans for every battery of six or eight pans, plus two 25-gallon, one 50-gallon, and one 10 gallon kettles.

The best location for a panning operation is in a well-lighted area with adequate floor-storage space available. Pans must be properly mounted to insure the centers will roll properly and not mass up in the back of the pan. Pans should have their own drives or if driven from a counter shaft, variable speed motors with a minimum speed of 18 r.p.m. and a maximum speed of 32 r.p.m. This gives the variation desired to engross any centers. Keep the polishing operation away from the engrossing department. Avoid hot or humid locations. Be sure that air vents are located at the proper angle to insure the proper flow of air on the goods.

Detailed instructions were given by Mr. Williams for making Smooth Jordan Almonds and for the panning of marshmallow egg centers.

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### CONFERENCE REPORT

## The proper storage of candies

by H. B. COSLER

Quartermaster Food and Container Institute

**M**any of you are far better qualified to discuss the subject of proper storage for candy than I am. Actually, those of you who manufacture bars or other specialties and have a very limited variety know the exact storage conditions necessary for your product or products.

In the early fall of 1952, storage studies on a variety of formulations of coconut bars were initiated at the Food and Container Institute, to try to determine the reason for deterioration which had previously been encountered in this type of bar. A paper covering the study was given before this group in 1954 (1). For control purposes, bars from each of six formulations were stored in the -20° F. room.

The extra cans of bars of each type were overlooked after the storage studies were completed and were left in the -20° F. room until the fall of 1956—a total of four years storage at this temperature. Each of the six types was examined at that time, and no apparent change in taste or consistency was evident. All of the bars had been tested for palatability by a taste panel of twenty members before they were put in storage and were graded on the nine point quality scale that ranges from a low of 1, which is extremely low, to a high of 9, which is excellent. In order to obtain an impartial judgment, two types of the stored bars were tested at the end of the four year storage

period by a taste panel, and graded on the same scale. These are the results:

	Number of Testers	Initial Rating	Rating after 4 yrs. Storage at -20° F.
Bar A	20	6.9	7.2
Bar B	20	6.8	7.2

Although the ratings after storage are slightly higher, the difference is not significant, showing that no apparent change in taste acceptance had occurred over the four year storage period. The rating of 7, which corresponds to good on the quality scale, is as high as ration bars normally rate.

Based on these results and the evidence presented by the two previous papers, I could make the positive statement that, with minor exceptions, the proper storage temperature for candy is -20° F. or lower.

This temperature might be ideal, but we all know that at present it is not feasible, primarily from the standpoint of economics. For most types of candy, frozen storage costs are prohibitive, facilities are not available and handling costs are high. Eventually however, this may be the solution for long term storage.

Taking the more realistic approach as to present day available storage conditions, we can do much to increase the shelf life of candy through proper



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Saran Wrap is the completely transparent plastic film with a soft-to-the-touch feel of quality. Candies look so good, feel so good in Saran Wrap, customers just can't resist them. And these impulse sales turn to repeat sales in a hurry, because Saran Wrap keeps

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Let Dow packaging service show you why it pays to put the *Saran Wrap hallmark of protection* on your packages. Write today for more information on the sales advantages of Saran Wrap packaging. THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Sales Dept. PL1603D.

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storage. Fortunately for increased popular appeal and high consumption, but unfortunately for prolonged shelf life, candy is composed of many materials. It usually contains three or more of the following class ingredients: sugars, corn syrup, starch, cocoa products, milk products, egg products, fats and oils, gums, pectin, gelatin, protein whipping agents, fruits, peanuts and tree nuts, colors and essential oils and flavors. The general statement might be made that the shelf life of candy is no longer than the shelf life of the component most susceptible to deterioration. Sugar, corn syrup, starch and the gums, pectin and gelatin are the least susceptible of these components to climatic conditions and except for high humidity, to which all candies are susceptible, the most undesirable condition for candies containing these materials only is low humidity, which causes drying out and crystal change. All of the other materials previously mentioned, when components of candy, are subject to some type of deterioration, usually oxidative or hydrolytic rancidity or protein deterioration. This last is sometimes called browning and is believed to be due to oxidation.

What, then, can be done to prolong the shelf life of candy containing these components so susceptible to deterioration? There are certain steps both chemical and physical, that may be taken to increase the shelf life. These will be mentioned briefly as they are not the complete solution. Humectants (2, 3) such as invert sugar, sorbitol or glycerin may be added to prevent loss of moisture and change in crystal structure; invertase may be added to invert the sugar and change the liquid phase of fondant creams, and antioxidants may be added to retard the development of rancidity when certain types of fats are present. Much can be accomplished by moisture and vapor proof packaging, whereby both moisture and air passage are controlled. Vacuum packaging eliminates most of the air present in the package and thus prevents oxidative rancidity. In addition to these, proper storage conditions are very necessary for extended shelf life.

The last statement has been substantiated by the results of the storage tests on candies in army rations conducted a few years ago at the Georgia Agricultural Experiment Station under contract by the Food and Container Institute for the Armed Forces. Several varieties of candies, part of which were in bar shape and part in candy pieces, were made with the addition of humectants and antioxidants. Every known precaution was taken to use ingredients having good shelf life, such as non-fat milk in place of whole milk, and fats of good stability. The coatings on the bars were the ration type coatings made with cocoa powder, non-fat milk and high melting point fats of good stability. The coatings were formulated to withstand a 100° F. temperature. Storage temperatures were -10° F, 70° F and 100° F. Alternating storage temperatures were also tried, but were discontinued after a few months because the results from the constant storage temperatures were giving the desired infor-

mation. There is no doubt that the shelf life of the candies under test was increased by the use of the materials mentioned above. It was also definitely proven that the storage temperature was a very important factor. In most cases, the candy stored at -10° F. could have been used as a control, as the deterioration was negligible. Deterioration occurred more rapidly at 70° F. storage and much more rapidly at 100°. From the results, it could almost be stated that at -10° F. the shelf life was indefinite, and that the candies deteriorated 3 to 5 times more rapidly at 100° F. storage, than they did at 70° F. storage. The results of these studies were published after completion of the storage tests (2).

The above tests were made on candies composed of materials having high stability. It should be very evident from the results that candies such as those on the commercial market made with less stable materials must be properly stored in order to insure any extended shelf life. Can proper storage conditions be defined?

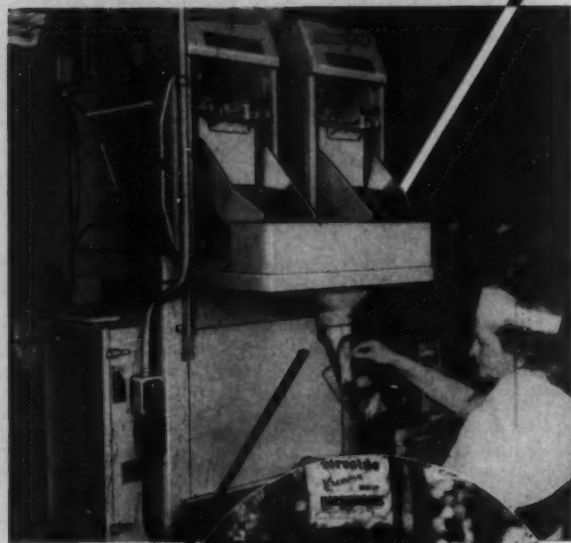
This is a difficult question to answer as much depends on the type and amount of the components and on the desired shelf life. Some general guide lines can be given however.

Cocoa products, the major one of which is chocolate coating, will be referred to very briefly. Everyone in our industry knows that solid chocolate and chocolate coated candies must be stored below the melting point of the cocoa butter (4). Economically, the best storage temperature would be about 65° F. with a relative humidity of 65 or less. However, other factors must be considered, such as nuts or peanuts in the solid chocolate or coated bars, the addition of invertase to the centers, and the type of centers in the chocolate coated candies as there is moisture transfer through the coatings under certain conditions. All of these factors have a bearing on storage.

As mentioned earlier, certain types of candies containing carbohydrates with or without binding or whipping agents have a shelf life dependent not so much on temperature of storage as on humidity. To determine the proper storage conditions of these candies, it is necessary to know the vapor pressure of the candy. It should then be stored at a constant temperature with the humidity controlled to the point at which the candy neither gains nor loses moisture. In this connection it is important to read, if you have not already done so, the results of Grover in England. In 1947, he published the results of his studies on the keeping quality of confections as influenced by their water vapor pressure (5). He stated that the wide variation in vapor pressure between different classes of candy results in widely different keeping qualities and requirements for satisfactory storage. His article discussed five points of his accomplishments: 1. Measurement of the vapor pressure of sugar, corn syrup and invert sugar syrups; 2. Measurement of the effects of secondary ingredients; 3. Development of a formula for calculating the vapor pressure of various kinds of confectionery;



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4. Actual measurement of the vapor pressure of commercial confectionery and 5. The keeping qualities and storage conditions.

His determinations were made at 20° C. and he developed a formula for determining the vapor pressure of a candy from the analysis of the composition even with milk as a component. He gave examples of various types of candy where his theoretical vapor pressure arrived at by the formula checks very closely to the measured vapor pressure. A method for temperature adjustment was also given. His results show that at 20° C. the relative vapor pressure, defined as the vapor pressure of the candy divided by the vapor pressure of pure water at the same temperature and multiplied by 100, is identical with the relative humidity at which candy will neither gain nor lose moisture. At 20° C. this varies from a low of 20 percent for hard candy to a high of from 70 to 80 percent for jellies, fondant creams and marshmallow. At 20° C. hard candy will absorb moisture if the relative humidity exceeds 20 percent. At the same temperature jellies, creams and marshmallow will lose moisture if the relative humidity is less than the calculated vapor pressure, which is between 70 and 80 percent, depending on the type. From his calculations and the tables given, the relative vapor pressure of practically all uncoated candies can be calculated. This is important in determining the storage conditions for candies where moisture gain or loss is the only factor to consider.

Martin has continued the study of vapor pressure of various types of candy under the joint research project between the National Confectioners' Association and the Department of Agriculture at the Southern Utilization Research Branch. He has determined the actual vapor pressure of several types of candies, primarily those containing high percentages of carbohydrates. His measured vapor pressures correspond very closely to those calculated by Grover's formula. Duck has also studied vapor pressures of candy in his research at Franklin and Marshall College sponsored by the Pennsylvania Manufacturing Confectioners' Association. His results have not been published as yet. The more information that can be obtained on this subject, the more accurately proper storage conditions can be determined.

Fats, such as added butter fat, or that contained in whole milk, and other unsaturated animal and vegetable fats used in candy, are very susceptible to oxidative rancidity. Essential oils used for flavoring are in the same category. High lauric types of fats, such as coconut oil used extensively in candy, are not subject to oxidative rancidity, but are susceptible to hydrolytic rancidity. Refrigerated storage will not entirely prevent the development of rancidity, but will retard it to the point where the shelf life can be extended by several weeks. The lower the temperature, the slower the development of rancidity. This is assuming that a good grade of fat or oil, in which little or no rancidity has developed, is used in making the candy.

Proteins, such as those contained in milk and in



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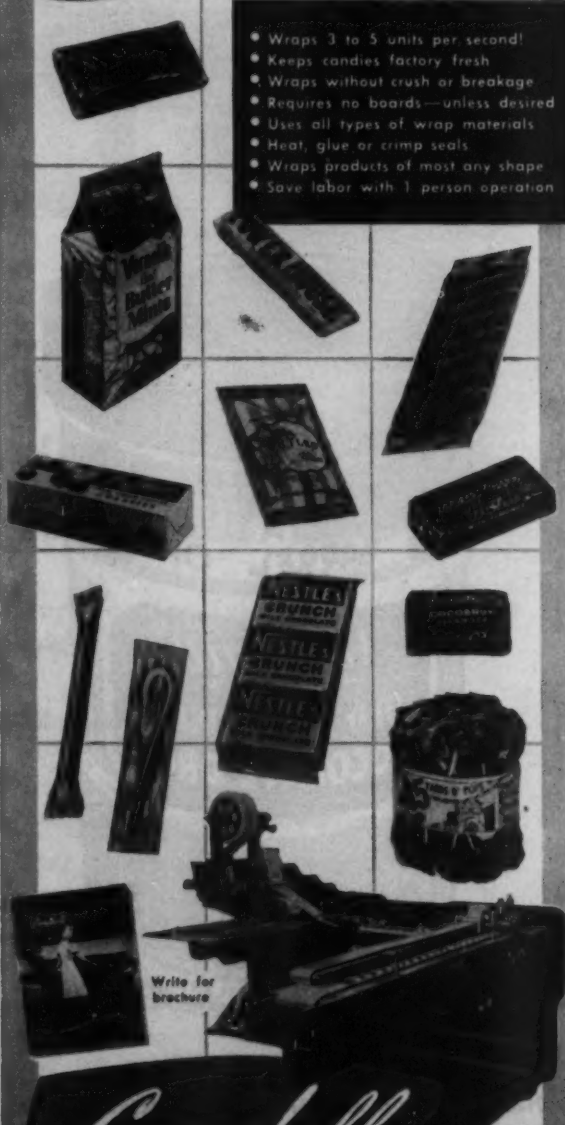
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I would advise everyone who is stock piling candy for future sales to make a detailed study of the storage conditions necessary to insure that the candy is of top quality at the time of sale. Candy can be properly stored within reasonable costs. Some of our more progressive companies have discovered this, and as a result, customer acceptance of their products has shown steady increases.

1. All types of candies are subject to deterioration.

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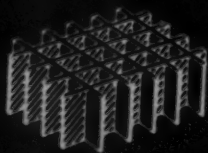
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2. The shelf life of a candy is no longer than the shelf life of the component most susceptible to deterioration.
3. Temperature and humidity control in the storage areas is most important for increased shelf life.
4. For most varieties of candy, the ideal storage would be in the freezing range—that is, 0° F. or below.
5. Each individual type of candy must be studied to determine the proper storage conditions.
6. Proper storage is essential to maintaining and increasing consumer acceptance.

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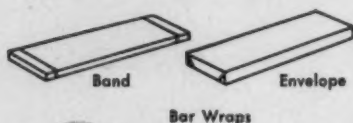
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### FOR WRAPPING BAR PRODUCTS

LENGTH	WIDTH	THICKNESS
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Does inner and outer wraps; of any type material from reels; outer wrap either envelope or band.

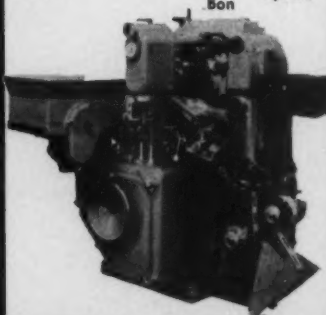
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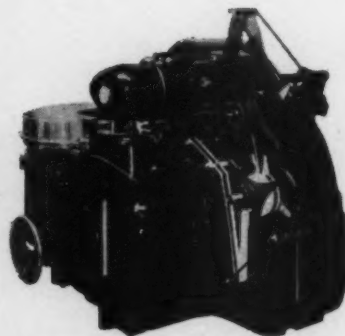
Performs single end twist (Panier), side bow twist (Sachet), Double end twist, Vienna Bon Bon fold or pointed wrap and heat seal, all on one machine. Speeds of 210-220 wraps per minute are normal, although rated speeds are 350 under maximal conditions.



## 2500

### FOR AUTOMATIC HIGH SPEED TWIST WRAPPING

Ultra-rapid wraps on hard candies. Double end twist wraps up to 500/minute; bunch wraps at 400/minute under maximal conditions. Completely automatic, handles all types of wrap materials from reels.



### FAST AS YOU WANT IT

Each Supermatic G.D. machine is designed for the wrapping of specific products. Guaranteed, normal speeds are faster than any other machines on the market, however, with many products, normal speeds can be exceeded considerably. There are no machines in the world that will match this performance.

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No variation in wraps; every piece is as specified. The Supermatic G.D. produces a perfect wrap every time, automatically. There are no machines in the world that will match this performance.

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For example, the new 2350 Super can switch from single to double twist or sachet wraps in a few minutes. This interchangeable feature also applies to other Supermatic G.D. machines. There are no machines in the world that will match this performance.

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Designed and engineered to give trouble-free performance for years. Features such as automatic lubrication, patented feeding mechanisms that save wrapping material; dust and crumbs automatically eliminated, are typical of construction details of Supermatic G.D. machines. There are no machines in the world that will match this performance.

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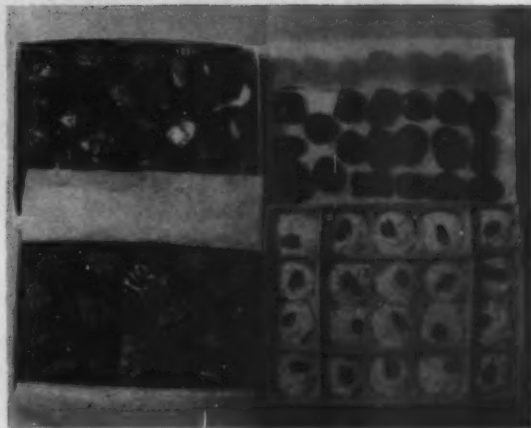
46 — The Manufacturing Confectioner





Figure 1. The 300 varieties of candies tested for their stability under freezing storage included, assorted chocolate boxed candies, "summer" candies, and bar goods.

Figure 2. Three boxes of assorted chocolate candies, and one box of pecan divinity, that were frozen for three years and then scored in practically perfect condition.



## Low temperature storage of candies

by DR. J. G. WOODROOF

Georgia Experiment Station

**T**he need and economic justification for freezing candies are similar to those for freezing other foods—better preservation for a longer time. This method of preservation is suitable for those candies (a) in which very high quality standards must be maintained; (b) in which a longer shelf-life is desired than is accomplished from other methods of storage; (c) which are normally manufactured from six to nine months in advance of consumption; and (d) which are especially suitable for retailing as frozen items.

In this discussion, *type* refers to a general grouping of about ten candies, such as hard candy, sugar creams, butter creams, fudge, caramels, nougat, gums, and marshmallows; *kind* refers to more specific designations of about 370 candies, such as molasses chips, spun peanut bars, vanilla creams, pecan fudge, chewy caramels, gum drops, and coconut bon bons; while *variety* refers to still more specific designations of more than 2000 candies,

such as pineapple cream, candy corn, peanut brittle, cordial kumquats, orange marmalade, peppermint cream and crispette.

The results reported in this paper have been gathered over a period of about ten years by workers at the Georgia Experiment Station in cooperation with numerous candy manufacturers and other organizations. More than 500 kinds of candies have been brought to the Experiment Station and frozen at 0°, -10°, -20° and -170° F. (dry ice), and the period of storage has ranged as long as three years. In other cases candies were frozen in commercial warehouses or in the laboratories of candy manufacturers.

Most of the packages included in these experiments were made commercially while many of them were assembled in the laboratory. In every case the method of application of packaging materials was similar, in so far as possible, to that of commercial operations. The methods of examining



Figure 3. Frozen candies may be retailed in the frozen state, provided the package is moisture-proof, and that it is allowed to reach room temperature before being opened.

the candies were similar to those described in previous reports; that is, a panel of scorers assigned a numerical value to the appearance, color, texture, aroma and flavor of each piece of candy. In many cases this information was supported by data on moisture content, peroxide values and reflectance.

One of the chief reasons for freezing candies is to hold them in an unchanged condition for as long as nine months, then thaw and sell them as fresh candies. Experience shows that this is not only possible but practical. The conditions that render such a procedure economical are: (a) freeze only those candies that would lose quality when held at a higher temperature; (b) eliminate the few kinds that crack during freezing; (c) package the candies in moisture-proof containers similarly as other frozen foods; (d) thaw the candies in the opened packages, to avoid condensation of moisture on the surface.

#### Freezing extended the shelf-life of candies

Experiments have shown that (1) hard candies and others that contained practically no fats and proteins remained stable for more than a year at common warehouse temperatures (70°-90° F.); (2) caramels, nougats, bon-bons, cordial fruits and others that were low in fats and proteins remained stable for as long as six months under refrigerated warehouse temperatures (36°-40° F.); while (3) high fat creams, caramels, fudge and nut candies required lower temperatures to prevent staleness and rancidity four months or longer. While freezing storage extended the shelf-life of most candies, the benefits were most marked with those highest in nuts, butter, cream, oleomargarine or other fats. In general, these candies did not require cordializing, mellowing or other slow tempering after being made; therefore, to preserve maximum freshness they should be frozen immediately after being manufactured.

The maximum length of time that candies were

held frozen varied with the formulation of the candy, storage temperature, method of packaging and time held after thawing. There were wide differences in the behavior of assorted candies in the same box; but the least stable boxed candies usually remained in excellent condition while frozen for as long as nine months, and the more stable kinds remained good for two years.

Cosler, et al, (2) found that the shelf-life of 12 kinds of candies, made according to military specifications, was extended from two to seven times by storing them at -10°, as compared with those stored at 70°; and the shelf-life was extended from three to eighteen times by storing them at -10° as compared with storage at 100° F. Candies benefited most by freezing are those shown in Table 1.

Table 1. Number of months required for 12 candies stored at 70° and at 100° to reach the same quality level as similar candies stored at -10° F. for 18 months.

Candy-name	Stored at 70° F.	Stored at 100° F.
Peanut bars	2½ months	1 month
Chocolate fudge bars	3 "	2 "
Coconut fudge bars	5 "	2 "
Spun candy bars	5 "	2 "
Pan coated peanuts	6 "	1 "
Grained caramel bars	6 "	2 "
Caramel nougat bars	6 "	2 "
Coconut cream bars	6 "	2 "
Chewy caramel bars	6 "	3 "
Candy corn	6 "	3 "
Starch jelly bars with fruit	10 "	3 "
Starch jelly bars without fruit	10 "	6 "

Woodroof (4) listed 43 varieties of candies that were unchanged by freezing; 30 varieties that were improved in freshness, mellowness, or smoothness by freezing; and 16 varieties that were injured by cracking. Of 37 varieties that were frozen at -10° and at -170° F. (dry ice), all but five behaved in an identical manner, showing that the temperature of freezing had little effect on the physical condition of the candies.

High butterfat creams held up well in taste and appearance during eight months of freezing storage.

#### Candies may be retailed in the frozen state

In an effort to follow more closely the expanding market of other frozen foods, some candies are now sold in the frozen state. According to a report (1) candy has been made and frozen in Chicago, transported in refrigerated trucks to Miami, and sold directly from the freezers through 33 bakery outlets.

While dozens of existing formulas for candies are adequate for freezing preservation, there appears to be a real opportunity for the development of candies especially suitable for eating either in the frozen state or immediately thereafter. Such candies would have a low melting point, coating which

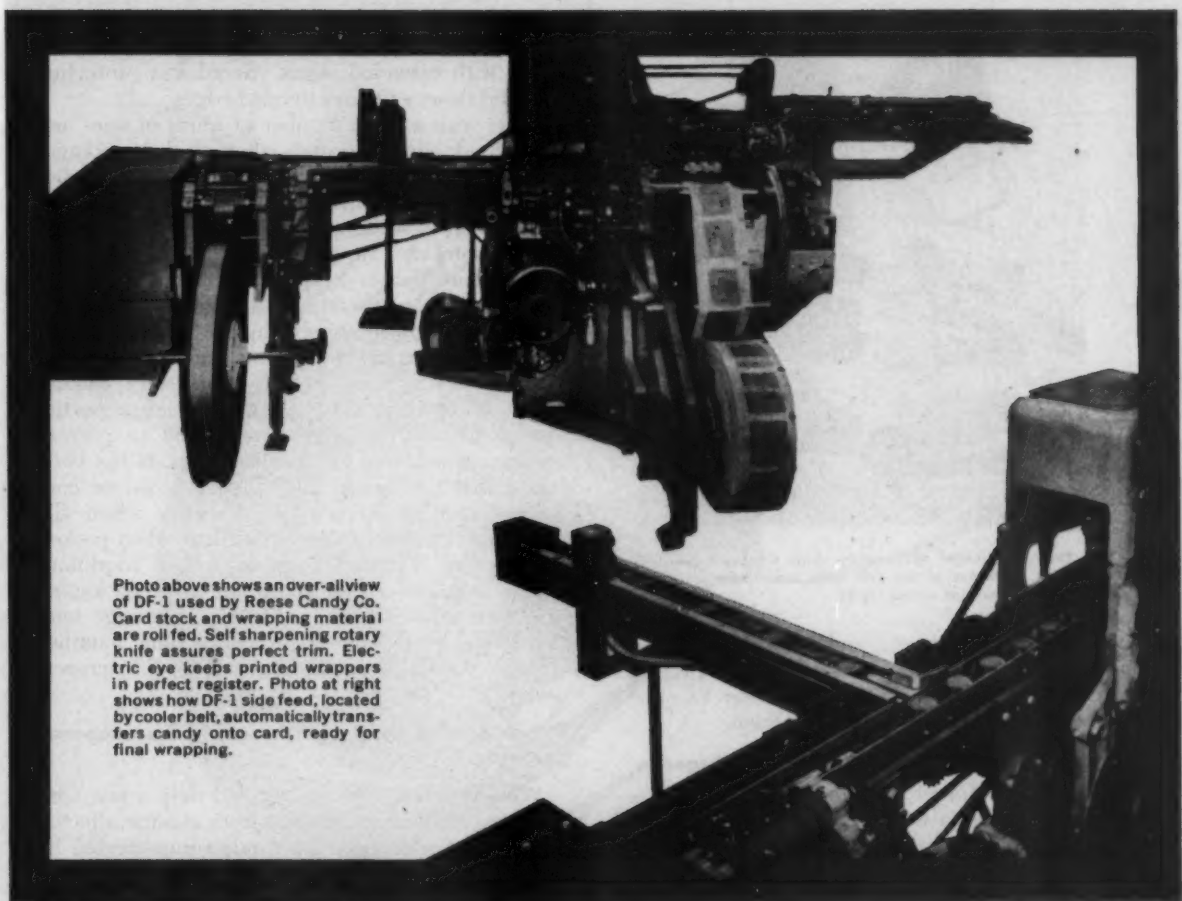


Photo above shows an over-all view of DF-1 used by Reese Candy Co. Card stock and wrapping material are roll fed. Self sharpening rotary knife assures perfect trim. Electric eye keeps printed wrappers in perfect register. Photo at right shows how DF-1 side feed, located by cooler belt, automatically transfers candy onto card, ready for final wrapping.

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And if it's versatility you require, the DF-1 offers you the greatest size range in the industry. It wraps candy bars from  $\frac{1}{4}$ " to  $1\frac{1}{4}$ " thick, 1" to 3" wide and  $2\frac{3}{4}$ " to  $6\frac{1}{2}$ " long. Change-over from one size to another requires only 30 minutes, involves a simple handwheel adjustment and small parts substitutions.

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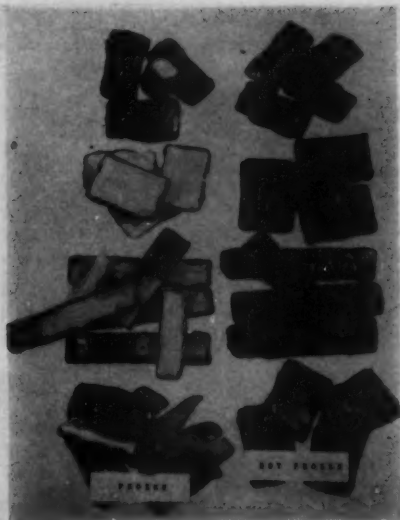


Figure 4. Four varieties of spun candy chips that split on being frozen; due to weakness of the cell walls under stresses caused by differences in expansion of the layers.

should be more flavorsome, and might be served as snacks or desserts. These candies made especially for freezing should be packaged similar to other frozen foods and retailed along with them.

#### Frozen candies required moisture-proof packages

Mantley (3) found that boxes of candy for freezing must be overwrapped and sealed with moisture-proof, air-proof cellophane, or equivalent to: (a) retard dehydration and loss in weight; (b) retard dulling and graying of chocolate coating; and (c) prevent condensation on the surface of candies during warming up. Candies adequately wrapped retained excellent flavor and lost less than one percent in weight during 241 days in freezing storage.

Woodroof (5) found that candies must be protected from drying, loss of flavor and oxidation during storage, by adequate packaging. This consisted of providing one or more moisture barriers—coatings, individual wraps, liners for boxes or overwraps for boxes. Experiments showed that candies for freezing required more protection than those for common storage, because the storage period was usually longer and there is a greater tendency for condensation upon removal. A single layer of moisture-proof material—aluminum foil, polyethylene, cellophane, glassine or laminations including one of these—afforded adequate protection. Candies not fully protected from desiccation often grained, became hard and lost flavor.

Most protection was provided when the moisture barrier was in contact with the candy in the form of a sealed, individual wrapper. Inner liners for the boxes protected candy, provided they were sealed (which was difficult and seldom accomplished). The usual manner of applying moisture barriers was as overwraps for the boxes chiefly because these were easiest to apply and seal by machines. Overwraps for boxes provided less protection than wraps for individual pieces of candy,

because of the relatively large amount of air enclosed within the former. For the same reason, boxes with extended edges offered less protection than did those without extended edges.

Tests with a large number of kinds of one- and two-pound boxes of candy showed that packages which were entirely adequate for holding candies for a few weeks in common storage were not suitable for holding candies for many months in freezing storage. In these experiments when the manufacturers' over-wrap for bars or boxes was replaced with overwraps of aluminum foil, saran, or special cellophane, polyethylene or glassine, the quality of the candy was retained more completely.

Since candies vary widely in moisture content (from .05 to 18 percent), hygroscopic properties and in flavors, the protection needed to prevent changes in moisture and flavors varies. It has been found that the flavors and original moisture content of candies were retained better when the candies were packed separately than when packed in boxes of "assorted" candies. Other conditions which increased the demand for good packaging of frozen candies were: variability of storage temperatures, long time (more than nine months) storage, and high storage (above 0° F.) temperatures.

#### Frozen candies should be thawed in the unopened packages

While freezing, per se, affected only a few candies, the manner of removal from storage affected all of them, especially the candies unprotected by special coatings or individual wraps. The problem was that of condensation of moisture on the surface of the individual pieces of candy on being transferred from a lower to a higher temperature. An extremely small amount of condensation on the surface, for only a few minutes, dulled the finish of candies, especially those with chocolate coating. While damp they were sticky, and on drying, sugar crystals appeared on the surface causing "sugar bloom".

An experiment was conducted in which 28 varieties of candies were frozen at -10° and at -170° F. (with dry ice). A portion of each of the lots of candies was taken from the two conditions, and (a) moved gradually to room temperature over a period of 24 hours, in the unopened boxes; (b) moved directly to room temperature (70° and 60 percent r.h.), allowed to reach room temperature, and then opened; and (c) moved directly to room temperature and the boxes opened immediately. From this experiment it was found that when the candies were allowed to come to room temperature gradually, in the unopened boxes, they were not affected in any way. However, when the boxes of frozen candies were opened at room temperature, all of the candies showed varying degrees of dullness, mottling, stickiness and sugar bloom.

Other experiments have shown that boxes of frozen candies may be removed from the freezer, overwrapped in several layers of untreated paper, allowed to reach room temperature (which required about two hours), and opened with no





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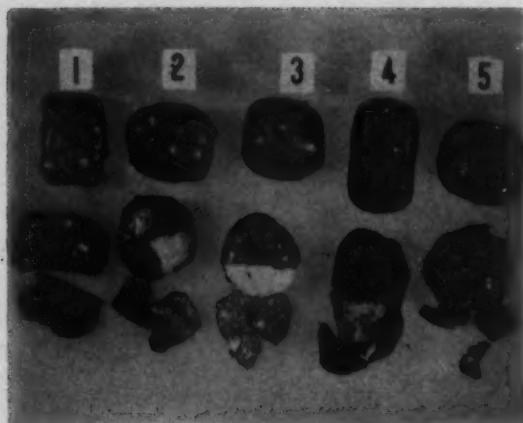


Figure 5. Candies which peeled after being frozen for six months and held at room temperature for eight weeks. (1) Butter Nut Crisp, (2) Vanilla Nut Fudge, (3) Opera Cream, (4) Coffee Walnut, and (5) Chocolate.

adverse effects on the candy. In this case, condensation formed on the moisture proof overwrap for the box and was immediately absorbed by the outer wrap of untreated paper, and no condensation formed on the candy itself. This procedure has been followed successfully in retailing frozen candies intended for consumption within a few hours. Still other tests have shown that when boxes of candy were hermetically sealed before freezing, condensation did not occur even when warming up was rapid, provided the boxes remained unopened during this time.

#### Some candies cracked when frozen

A problem occasionally met with freezing candies is that of cracking. This is due to uneven expansion of components of the individual pieces during freezing. Experiments have shown that cracking occurs at temperatures of about 15° F., and results in accelerated loss of flavor, staling and rancidity. Mantley (3) found the temperature curve during freezing cream type boxed candies to -30° F. was smooth, showing no definite "freezing point". There was also no difference in the rate of freezing candy in wrapped and unwrapped boxes.

Data in Table 2 show that of 99 varieties of chocolate coated candies that were frozen, none of the 54 with soft centers cracked; while all of those with hard centers cracked. These data also show that of 29 varieties of candies coated with dark chocolate, four (13.8%) cracked; and of 70 varieties of candies coated with light (milk) chocolate, 20 (28.5%) cracked.

While 45 varieties of chocolate coated candies with hard centers were tested, they represented only a few kinds—honey comb chips, pulled or spun bars and chocolate coated brazil nuts, almonds and filberts. No chocolate coated peanuts, pecans or walnuts cracked on freezing. Candies in this test were from several manufacturers; while in subsequent tests candies with dark and light chocolate coatings, from the same manufacturers showed no relation between the type of coating of candies and cracking. Assorted candies of 43 varieties from

one manufacturer were held frozen for three years. Of these candies three varieties—honey comb chips, filberts in caramels and almond puffs—cracked.

The nature of the cracking was important. The chocolate coating of frozen brazil nuts or hard candies usually had a single crack extending almost around the piece. When the candy was brought to room temperature the crack closed, and its presence was detected with difficulty. On the other hand, both the coating and the centers of honey comb chips cracked during freezing, and on thawing each piece of candy crumbled. Of eight varieties of honey comb chips, and other spun candies tested, those with the smallest cells and thinnest cell walls cracked worse.

The solution to the problem of crumbling candy centers or cracking chocolate coatings during freezing, seems to be to exclude from the pack the few kinds which have these characteristics.

Table 2. The effect of center, and type of chocolate coating, on cracking of the coating of 99 varieties of candies:

Center	Coating	Cracked	
		yes	no
		number	number
Soft	Dark	0	4
	Light	0	50
Hard	Dark	25	0
	Light	20	0

#### A few candies were improved by freezing

Candies which were improved in freshness, mellowness or rendered smoother in texture by freezing included those with high moisture content and without protective coatings or individual wrapping. Usually those were candies which were ordinarily subject to surface drying. Marshmallows, jellies, caramels, fudges, divinities, coconut macaroons, fruit loaves, coconut bon bons, panned Easter eggs, malted milk balls, and chocolate puffs were in this group. All of these candies were improved by reducing surface "case hardening", and in some instances reducing surface cracking due to drying. Mellowing was apparently accentuated by freezing and thawing; this was particularly true with candies containing fruits and nuts.

#### The stability of candies after freezing was good

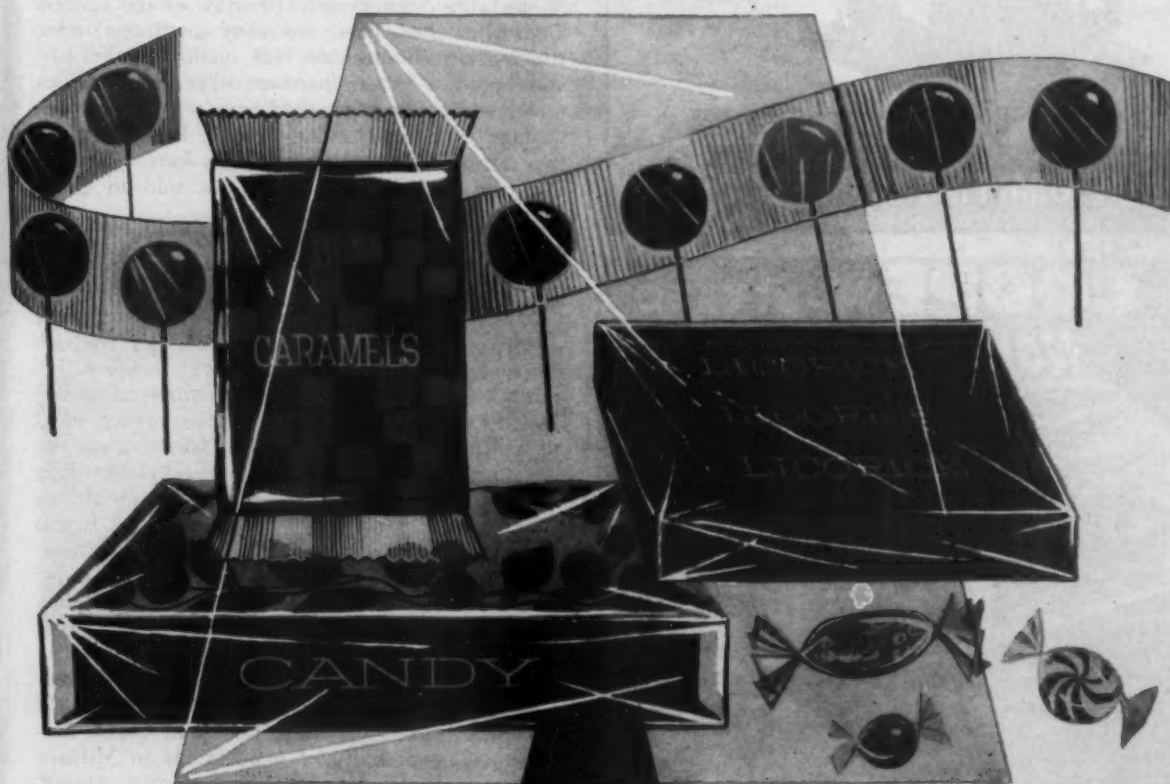
Experiments and practical experience have shown that candies may be held frozen for six months or more, carefully thawed, and then sold as fresh candies. Tests in which candies were frozen for several months, and then thawed and held at room temperature for eight weeks, showed no significant differences in the stability of the frozen and unfrozen candies. Mantley (3) found that candies could be thawed and refrozen without serious loss in appearance or taste.

#### Recommendations

General statements in reference to the advisability of freezing candies are not applicable because

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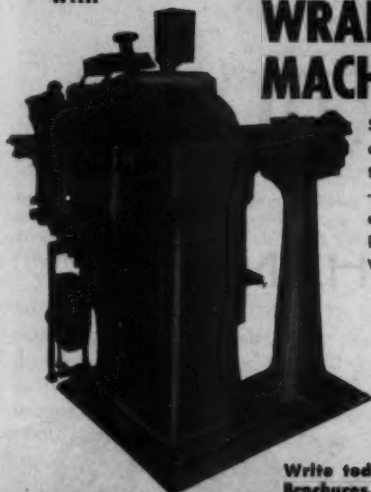
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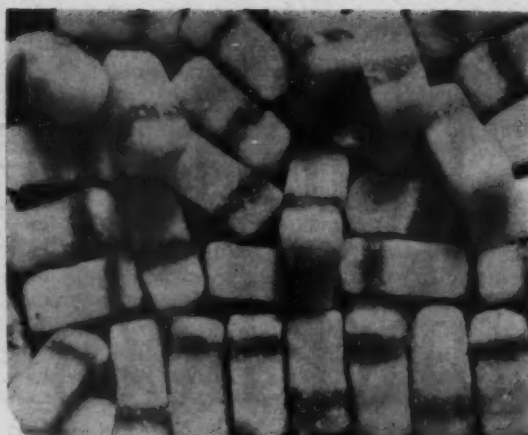


Figure 6. Coconut squares. Uncoated blocks of shredded coconut in hard cream represent a type of candy that was freshed by freezing. This was especially true when they had dried slightly before freezing.

of the wide differences in behavior of the various kinds of candies. There are many conditions under which relatively unstable, high quality candies can and should be frozen; there are other circumstances under which freezing would have no practical advantage over non-freezing storage. Between these two extremes lie most of the candy bars, bulk candies and boxed candies that are sold in chain stores, drug stores and candy shops.

It appears that the advantage and need for freezing candies are increasing yearly. These will likely be accentuated with the advent of fewer working days per week, more demand for stock piling candies, longer shipping distances, and increase in space available for frozen candies.

It is recommended that manufacturers considering freezing candies (a) carefully evaluate each kind of candy as to its suitability for freezing, the economic need for freezing and the stability after thawing; (b) evaluate the packages now being used, especially as to their protection of frozen candies against changes in moisture; and (c) explore the potentialities of developing formulas for new candies particularly adapted for freezing.

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5. Woodroof, J. G. Protective Packaging of Candies. *Package Eng.* 1 (5): 8-13. May 1956.

\*Technical paper No. 309, Journal Series, Georgia Experiment Station



# New Products



A fog resistant cellophane has been developed that resists the moisture clouding on packages stored in low temperatures. This new film may prove useful for candy packages that are sold frozen or are stored and displayed in low temperature cabinets.

For further information write; E. I. DuPont Co., Wilmington, Delaware.



A new tape handle Hallowe'en folding carton has been designed. They are stock items in a full line of stock printed folding cartons for all seasons, to be sold filled by manufacturers, or sold with bulk candy for packaging by customers.

For further information write; Cooper Paper Box Corp., 19 Hardwood Place, Buffalo 10, N. Y.

A new transparent pressure sensitive tape has been developed. It is a lamination of cellophane and polyethylene. It is claimed that this tape generally combines the best properties of both of these films into one that is superior to either of the films, separately, for most purposes.

For further information write; General Tape Corporation, Saint Paul 1, Minnesota.



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For further information write: American Viscose Corp., film division, 1617 Pennsylvania Ave., Philadelphia, Penna.

A new container has been developed that combines some of the advantages of both flexible and rigid containers. It is made from a carton with foil liner and overwrap, bonded

to the carton with wax. These are bonded into a single wall. The package is opened by running an ordinary kitchen knife along dotted lines.

For further information write: Reynolds Metals Company, 2500 South Third Street, Louisville, Kentucky.

How to decorate windows is covered in a booklet showing principally the potential uses of crepe paper for background, valances, drapes and fringes. Basic ideas for show window design and decorating are outlined,

and typical finished windows are pictured.

For further information write: Denison Manufacturing Co., Framingham, Massachusetts.

I. D. Company is importing a decorated tin called "Moresque Bonbonniere", oval shaped, with many colors woven into a filigree pattern and simulated jewels.

For further information write: I. D. Company, 150 Spring Street, New York 12, New York.

A new vending machine has been developed by Lehigh, Inc., in cooperation with Hershey Chocolate Corporation to vend a selection of Hershey 10¢ items. Each of the three columns accepts 80 bars, with a first-in-first-out feed. The machine is 13" x 13" x 57", and is designed to sell for under \$100.

For further information write: Lehigh, Inc., 1500 Lehigh Drive, Easton, Pennsylvania.



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## New Packages



The Daintee line of confections imported from England by the S. L. Kaye Company of New York is packed and priced for the super-market trade. Initial marketing will be in San Francisco, Philadelphia, Detroit, St. Louis and Chicago.

Packages are overwrapped in foil printed in full color. The unusual package has one face designed for horizontal display while the other face, with a similar design, is intended for a vertical display.



Guittard's new package for milk chocolate drops features a clear panel in an otherwise opaque reverse printed celo. bag. While recipes are given for their use in cooking, the face of the package emphasizes that they are good to eat as they are.



## These packages stand the gaff

When careless youngsters scatter candy packages on the floor, the ones made of VISQUEEN film don't break. They stand the gaff. Moreover, VISQUEEN 'q' film is clear and sparkling as a polyethylene film can be. That's why stores everywhere demand candy packaged in VISQUEEN 'q' film. For names of converters in your area use the information tag.

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## capsule case history 1 - AIRPLANE MODEL KIT

Preformed, loose plastic airplane parts placed on flat bottom card are heat sealed in sturdy polyethylene coated cellophane pouches. Parts not disturbed by stops or starts due to "Continuous Flow" design... "Flexopaker" production averages 3,000 packages per hour. Creates attractive visual pack yet holds loose contents in position. Tough poly-coated cellophane repels sharp edges... no cracking or shrinking.

## capsule case history 2 - SCREWS

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*Continuous Flow* packaging

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## New Packages



Peerless Confectionery Company is using a new coated type of Mylar polyester film bags for their wrapped hard candies. This type of coated Mylar heat-seals, and can therefore be used on automatic packaging machinery.



Kraft is using special Halloween packaging this fall for the first time. Both their Caramels and new Fudgies will carry a "Trick or Treat" promotion message for the bag line. The Halloween scene will be carried on header labels. The 24 count bar boxes will carry the theme on cellophane overwraps.



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Customers are often inspired by a container to buy confections on impulse. They buy again and again when they can depend upon factory freshness. These containers, the kind that win extra sales and preserve the goodness of the confectioner's skill, are made of lithographed metal by J. L. Clark.

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Your sales can be sweeter with lithographed metal containers from Clark. Write today for a sample container . . . see what Clark can do. J. L. Clark Manufacturing Co., Home Office and Plant, Rockford, Illinois; Liberty Division Plant and Sales, Lancaster, Pa.; New York Sales Office, Chrysler Bldg., New York 17, N. Y.

*Lithographed Metal Containers* **J. L. CLARK**



# NCA convention program

**MONDAY, JUNE 10, 1957**

## **CANDY TECHNOLOGY JOINT SESSION OF NCA—AACT**

Illinois Institute of Technology

- 8:30 a.m. Technical Film—"Growing Mexican Cacao"—Ambrosia Chocolate Co.
- 9:05 a.m. "Recent Advances in Food Technology as Applied to Candy"—Dr. James Albrecht.
- 9:35 a.m. "The Art and Science of Candy Flavoring"—Robert L. Swaine.
- 10:00 a.m. "Progress in Confectionery Research"—Dr. L. F. Martin, C. H. Mack, A. G. Smith.
- 10:20 a.m. "Development, Preparation and Characteristics of Fat Products"—Mr. Rueben O. Feuge.
- 10:55 a.m. "Study of the Vapor Pressure of Hard Candy"—Mr. William M. Duck.
- 11:15 a.m. "Protective Packaging of Candy"—Dr. Lucius W. Elder.
- 12:00 noon Luncheon at Student Lounge, Commons Building, Tickets NCA. Speaker: "Food Fads and Fancies"—Colonel Charles Lawrence.
- Annual Meeting of AACT—Election of Officers, Stroud Jordan Award

**TUESDAY, JUNE 11**

Waldorf Room, Conrad Hilton Hotel

- 9:40 a.m. Reports of Committee Chairmen and Presentation of Staff
- Washington Activities
- Confectionery Research Projects
- Confectionery Coating and Development
- Sanitary Advisory Service
- Sales Taxes and Promotional Activities
- Confectionery Public Relations Activities
- Informational Services, Exposition
- 11:00 a.m. How to Operate Your Business at a Profit
- A. Current Business Financial Problems—How Can They be Solved?
- 11:20 a.m. B. Third Annual Confectionery Industry Financial Survey Provides Some Answers
- 11:50 a.m. Presentation of Proposed Policy Statements
- W. C. Dickmeyer.
- 12:30 p.m. Official Luncheon of the NCA 74th Annual Convention—Grand Ballroom
- THE HONORABLE EZRA TAFT BENSON**
- Secretary of Agriculture

**WEDNESDAY, JUNE 12**

## **FROM CONCEPTION TO CONSUMPTION**

- 9:30 a.m. I. "Packaging—is a Must"
- II. "Distribution—Another Must"
- III. "Merchandising at Point of Sale—Still Another Must"

**WEDNESDAY EVENING, JUNE 12, 1957**

7:30 p.m. Film: "Cleaning Soft Tile Floors."

8:00 p.m.

### **I. Plant Problems**

- "Automation"—Mr. William J. Scarlett.
- "New Food and Drug Legislation"—George F. Daughters.
- "Practical Quality Control"—Robert F. Sebrechts.
- "Plant Sanitation"—Gerald S. Doolin.

### **II. Ingredient Materials Formulations and Processing**

- 8:30 p.m. "Texture Control in Confections"—Justin J. Alikonis.
- "Selecting the Right Formula"—James A. King.
- "Candy Plant Automation"—G. Lloyd Latten.
- "Chocolate Coating Techniques"—Norman W. Kempf.
- "Confectionery Research"—Dr. L. F. Martin.

9:10 p.m.—10:00 p.m. Questions and Answers

**THURSDAY, JUNE 13**

- 9:30 a.m. Trade Practice—Panel Discussion
- Edward F. Howrey
- Former Chairman, Federal Trade Commission
- George P. Lamb
- Member, Attorney General's National Committee to Study the Antitrust Laws
- 11:00 a.m. Action on Policy Statements
- W. C. Dickmeyer.
- 11:15 a.m. "The Challenge of The Times"
- Introduction of the Honorable Charles A. Halleck, Congressman, Indiana; Majority Leader in 80th and 83rd Congress, By W. C. Dickmeyer
- 8:00 p.m. Candy Cotillion

# NCA Exhibition floor plan

June 10 through 13, 1957

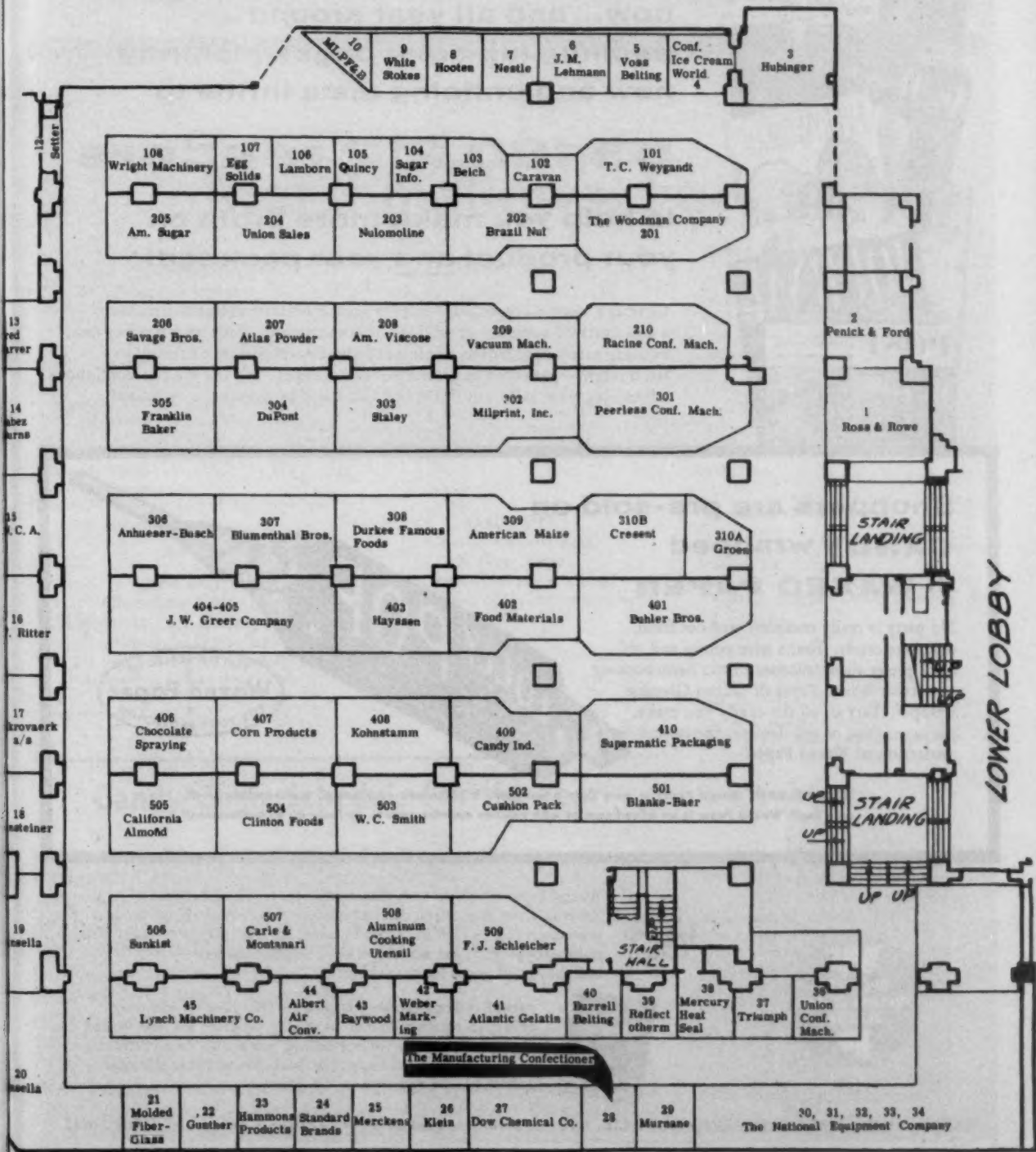
Monday, 2 P.M. - 8 P.M.

Wednesday, Noon - 8 P.M.

Tuesday, 2 P.M. - 8 P.M.

Thursday, Noon - 8 P.M.

An alphabetical list of exhibitors and information on exhibits begins on page 68





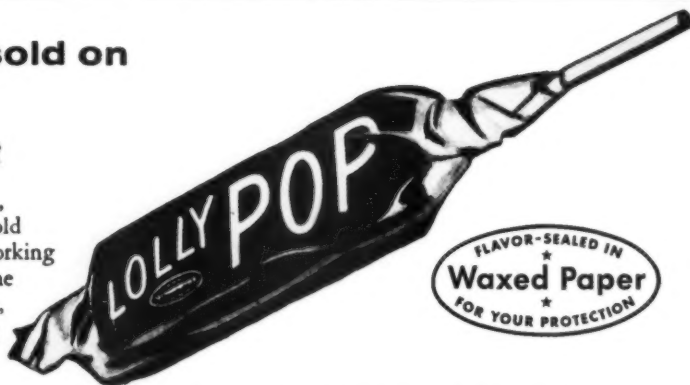
# NATION-WIDE CONSUMER CAMPAIGN

now...and all year around...  
exciting full color pages picturing  
new and enticing taste thrills to  
**53,180,212 readers**  
to help you make more profit on  
your product and your package!

Coverage, continuity, impact! Eleven great consumer magazines reaching a concentrated audience of millions of homemakers! Page after page of taste-exciting menu suggestions to please the hard-to-please. Appetizing food for thought—packaged in protective Waxed Paper. It's the kind of continuous advertising your sales will thrive on! Get the Waxed Paper story today!

## Shoppers are pre-sold on CANDY wrapped in WAXED PAPER

No party is really complete without fresh, delicious candy. That's why young and old alike prefer their favorites in the hard-working protective Waxed Paper or Waxed Glassine wrapper. Fact is, *all* the candy you make, package, ship, or sell deserves the lasting protection of Waxed Paper!



**REMEMBER**, Waxed Paper is more than a wrapper. It billboards your brand, merchandises itself, sells itself. Waxed Paper is an advertisement with genuine appetite appeal. In fact—it's an appetizement!



Waxed Paper teams up with the experience, facilities, services of America's top converters, delivers modern design packaging, product protection that pay off in bigger business for you! Suggested sales ideas, traffic-stopping designs, actual samples, complete cost sheets—and they're all yours for the asking!



**"Hitch-Hike Planning Guide"**—Tells how to *hitch* your efforts to nationwide merchandising program for new Waxed Paper Seal . . . *bike* volume selling, net profits of all products packaged in Waxed Paper. See your Waxed Paper salesman now. Or write or telephone us direct.

WAXED PAPER MERCHANDISING COUNCIL, INC. 38 South Dearborn Street • Chicago 3, Illinois • STate 2-8115



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# Candy Clinic

The Candy Clinic is conducted by one of the most experienced superintendents in the candy industry. Some samples represent a bona-fide purchase in the retail market. Other samples have been submitted by manufacturers desiring this impartial criticism of their candies, thus availing themselves of this valuable service to our subscribers. Any one of these samples may be yours. This series of frank criticisms on well-known branded candies, together with the practical "prescriptions" of our clinical expert, are exclusive features of The MANUFACTURING CONFECTIONER.

## Marshmallows; Fudge

**Code 6F7**  
Milk Chocolate Coated  
Peanut Cluster  
Cream Center  
1½ ozs.—10¢

(Purchased in a chain drug store,  
Los Angeles, Calif.)

Appearance of Bar: Good  
Wrapper: Cellulose printed in brown  
and yellow, red and blue.

Bar:  
Coating: Good  
Peanuts: Good  
Center: Good

Remarks: The best bar of this type we  
have examined this year.

**Code 6G7**  
Chocolate Coated  
Chocolate Nut Fudge Bar  
(Looks like a 10¢ seller)  
1¼ ozs.—No price stated  
(Purchased in a chain drug store,  
Los Angeles, Calif.)

Appearance of Bar: Good

Size: Good  
Wrapper: Foil printed in blue.  
Bar:  
Coating: Light: Good  
Center:  
Color: Good  
Texture: Good  
Nuts: Good  
Taste: Good

Remarks: One of the best chocolate  
coated nut fudge bars we have ex-  
amined this year.

**Code 6H7**  
Coated Cream Egg  
½ Egg Type  
1¼ ozs.—No price stated  
(Purchased in a chain department store,  
Los Angeles, Calif.)  
Appearance of Egg: Good  
Wrapper: Foil printed in lavender and  
white.  
Egg:  
Coating: Light: Fair

Center:  
Color: Good  
Texture: Good  
Flavor: Fair  
Remarks: This cream egg is not up to  
the standard of other 5c cream eggs  
we have examined.

**Code 6J7**  
Coated Marshmallow Bar  
1½ ozs.—10¢  
(Purchased in a chain drug store,  
Los Angeles, Calif.)  
Appearance of Bar: Good  
Size: Good  
Wrapper: Red foil printed in brown  
and white.  
Bar:  
Coating: Light: Good. Nuts in the  
coating.  
Center:  
Color: Good  
Texture: Tough  
Taste: Fair  
Remarks: We have examined better  
quality marshmallow bars at the price  
of 10c. Center formula should be  
checked as it is too tough.

## Candy Clinic Schedule For the Year

JANUARY—Holiday Packages; Hard Candies  
FEBRUARY—Chewy Candies; Caramels; Brittles  
MARCH—Assorted Chocolates up to \$1.00  
APRIL—\$1.00 and up Chocolates; Solid Chocolate Bars  
MAY—Easter Candies and Packages; Moulded Goods  
JUNE—Marshmallows; Fudge  
JULY—Gums; Jellies; Undipped Bars  
AUGUST—Summer Candies and Packages  
SEPTEMBER—Bar Goods; 5¢ Numbers  
OCTOBER—Salted Nuts; 10¢-15¢-25¢ Packages  
NOVEMBER—Cordial Cherries; Panned Goods; 1¢ Pieces  
DECEMBER—Best Packages and Items of Each Type Considered  
During Year; Special Packages; New Packages

**Code 6K7**  
Easter Chicks  
1¼ ozs.—10¢  
(Purchased in a chain store,  
Los Angeles, Calif.)  
Appearance of Package: Good  
Box: 4 Marshmallow chicks in colors.  
Box has folding window top and  
sides. Printed in purple and red.  
Overall cellulose wrapper.  
Chicks:  
Colors: Good  
Molding: Good  
Texture: Tough  
Flavors: Fair  
Remarks: A good looking Easter 10c  
novelty. We can not expect too much  
for a novelty at this price.

**Code 6L7**  
**Panned Marshmallow Eggs**  
**1 lb.—39¢**

(Purchased in a chain store,  
 Los Angeles, Calif.)

**Appearance of Package:** Good  
**Container:** Cellulose bag printed in  
 green, yellow, purple and white. Im-  
 print of fruits in colors.

**Eggs:**

**Colors:** Good  
**Panning:** Good  
**Finish:** Good  
**Center:**  
**Color:** Good  
**Texture:** Tough  
**Flavor:** Fair

**Remarks:** We have examined better  
 quality eggs at this price.

**Code 6B7**  
**Chocolate Coated Mint Patty**  
**1¼ ozs.—5¢**

(Purchased in a chain drug store,  
 Los Angeles, Calif.)

**Appearance of Patty:** Good

**Size:** Good

**Wrapper:** Glassine printed in green, red  
 and white.

**Patty:**

**Chocolate Coating:** Dark: Good  
**Center:**  
**Color:** Dirty looking fondant  
**Texture:** Good  
**Flavor:** Good

**Remarks:** Suggest fondant be checked as  
 it did not have a good white color.

**Size:** Good if it is a 5c seller

**Bar:**

**Coating:** Fair

**Center:**

**Color:** Good  
**Texture:** Good  
**Peanuts:** Good  
**Taste:** Good

**Remarks:** A well made bar. The coating  
 is not up to the standard we find in  
 other bars of this type.

**Code 6D7**  
**Taffy Bar**  
**Peanut Butter Center**  
**1 oz.—5¢**

(Purchased in a chain drug store,  
 Los Angeles, Calif.)

**Appearance of Bar:** Good

**Size:** Good

**Wrapper:** Wax paper printed in black  
 and yellow.

**Bar:**

**Color:** Good

**Code 6C7**  
**Coated Caramel Nut Roll**  
**1¼ ozs.—No price stated**

(Purchased in a chain drug store,  
 Los Angeles, Calif.)

**Appearance of Bar:** Good

**OCOMA**  
 of Omaha

*Finest* **ALBUMEN**  
*...especially for Candy Trade*

**FROZEN EGG WHITES**

**POWDERED . . FLAKE  
 AND GRANULAR  
 ALBUMEN**

**OCOMA FOODS CO. • OMAHA, NEBR.**

**MR. MANUFACTURER**  
**For Your Candy Selling Needs—**  
**A CANDY SALESMAN**  
**A CANDY SPECIALIST**

—Sponsored by The New York Candy Club





Texture: Good

Peanut Butter: Good

Taste: Good

Remarks: The best 5c bar of this type we have examined this year.

**Code 6E7**  
**Milk Chocolate**  
**Coated Cream Bar**  
**1 1/4 ozs.—10¢**

(Purchased in a chain drug store,  
Indianapolis, Indiana)

Appearance of Bar: Good

Size: Good

Wrapper: Cellulose printed in purple  
and white stripes.

Bar:

Milk Chocolate Coating: Good

Center: Good

Nuts in the Coating: Good

Remarks: The best bar of this kind we  
have examined this year. Very good  
quality for a 10c bar, should be a  
good seller.

**Code 6A7**  
**Assorted Chocolates**  
**1 lb.—\$1.60**

(Sent in for analysis No. 4797)

Box: Oblong shape, one layer type. Em-  
bossed silver paper top. Name and  
tree printed in green. Cellulose wrap-  
per.

Appearance of Box on Opening: Bad.

**BULK SUGAR**  
**AUTOMATION CUTS**  
**COSTS UP TO**  
**55¢ PER CWT.**

Sugar users are more  
than meeting the burden  
of rising material and  
production costs by  
installing modern pneu-  
matic in-plant sugar han-  
dling equipment. From  
actual delivery to use  
anywhere in your plant,  
pneumatic tube sugar  
transports do the entire  
job. No bags, no han-  
dling, simplified storage.  
Large and small users  
report up to 55¢/cwt.  
savings over older meth-  
ods. Call on us, we'll give  
you all the details, with-  
out obligation, as part of  
our service as sugar  
brokers helping to better  
serve the industry in ev-  
ery way.

**CHARLES FUCHS & CO.**  
**SUGAR BROKERS**  
**120 Wall St., N. Y. 5, N. Y.**  
**BOWling Green 9-7171**

Member  
N. Y. Coffee & Sugar Exchange, Inc.

Number of Pieces:

Dark Coated: 13

Light Coated: 23

Bon Bons—Summer Coating: 2

Coatings:

Colors: Good

Gloss: Fair

Strings: Good

Taste: Good

Dark Coated Centers:

Mint Cream: Good cream, poor mint  
flavor

Cream: Could not identify flavor

Brazils: Good

Vanilla Cream & Cashew Nuts: Nuts  
were soft; fair

Nut Nougat: Good

Vanilla Chew: Too hard

Vanilla Nut Caramel: Good

Cream: Lacked flavor

Vanilla Caramel: Good

Light Coated Centers:

Brazil: Good

Vanilla Cream: Good

Cream: Lacked flavor

Vanilla Chew: Too hard

Walnuts & Cream: Good

Nut Nougat: Good

Almonds: Good

Cordial Cherry: Broken and dry

Chocolate Cream: Good

Walnut: Good

Cream: Lacked flavor

Coconut Cream: Good

Cashews: Good

Bon Bons: Good



## ANHEUSER-BUSCH, INC.

**Hopes you plan to attend the**  
**National Confectioners Association**  
**Convention June 9-13.**

**We invite you to visit us at our**  
**Booth No. 306**  
**and our headquarters**  
**Suite 1806**  
**Conrad Hilton Hotel**

**Corn Products Department**

**St. Louis, Missouri**

**General Office**

**721 Postalozzi St.**

**NEW ORLEANS, LA.**  
314 Girod Street

**COLUMBUS, GA.**  
2319 Hamilton Rd.

**KALAMAZOO, MICHIGAN**  
1122 Royce Avenue

**SAN FRANCISCO, CALIF.**  
1485 Bay Shore Blvd.

**NEW YORK, NEW YORK**  
33rd St. and 12th Ave.

**CAMBRIDGE, MASS.**  
111 Sixth Street

**CHICAGO, ILLINOIS**  
750 So. Clinton

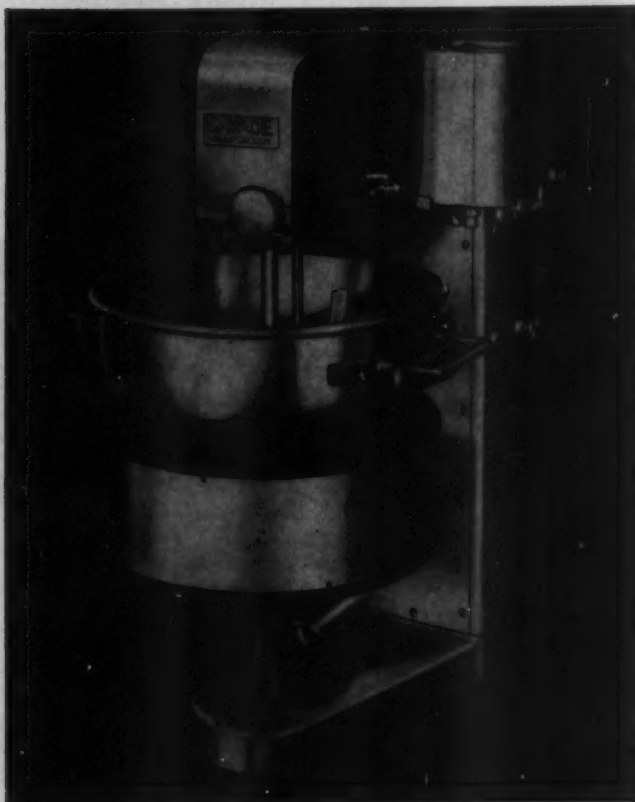
**PHILADELPHIA, PA.**  
Bourse Bldg.

*Sales  
offices . . .*

# SAVAGE LATEST FIRE MIXER

MODEL S-48

Thermostatic Gas Control—Variable Speed



The Savage Latest Fire Mixer, Model S-48, is Streamlined and Sanitary and has many new features and conveniences:

- Automatic Temperature Control
- Variable Speed from 30 to 60 RPM
- Break-back within floor space 32" x 48"
- Aluminum Base and Body Castings
- Atmospheric Gas Furnace with Stainless shell
- Removable Agitator, single or double action
- Stainless Cream Can and Stainless Drip Pan
- Copper Kettle 24" diameter 12½" deep or 16" deep

You can save labor and obtain uniform batches by setting the thermostat for degree cook desired. It cooks and mixes batches of caramel, peanut brittle, peanut candies, fudge, nougat, gum work, and with double action agitator is ideal for coconut candies and heavy batches.

Your inquiry invited

## SAVAGE BROTHERS COMPANY

2638 Gladys Ave.

Chicago 12, Ill.

**Assortment:** Too small for a one pound assortment. Suggest the following: Use a better grade of flavors; use enough to give center a good taste; add some hard candy centers, a good fruit jelly and marshmallow. Use less cream centers.

**Remarks:** Box is highly priced at \$1.60 the pound. We have examined far better chocolates at \$1.20 and \$1.35 the pound. Quality of centers and coatings is not up to the standard used in other chocolates priced from \$1.50 to \$1.60 the pound.

### Code 5C7 Assorted Chocolates 1 lb.—\$1.20

(Purchased in a retail candy shop, Los Angeles, Calif.)

**Appearance of Package:** Good for this priced chocolates.

**Box:** Oblong shape, one layer type. White glazed paper top, name embossed in gold. White paper wrapper, gold seals on ends.

**Appearance of Box on Opening:** Good. All pieces in foil cups.

**Number of Pieces:**

Light Coated: 9

Dark Coated: 14

Jelly Half Dipped: 1

Brazil Caramel Half Coated: 1

Sprill Top: 1

**Coatings:**

Colors: Good

Gloss: Good

Strings: Fair

Taste: Good

**Dark Coated Centers:**

Brazil Nuts: Good

Buttercream: Good

Pecan Clusters: Good

**Nut Nougat:** Good

Kernel Paste: Good

Chocolate Nut Cream: Good

Almonds & Cream: Good

Maple Nut Cream: Good

Fruit & Nut Cream: Good

Caramallow: Good

Caramel Patties: Good

**Light Coated Centers:**

Fruit & Nut Cream: Good

Fruit Nougat: Good

Caramel Patties: Good

Almond & Date: Good

Chocolate Cream & Almonds: Good

Date & Nut Paste: Good

Half Coated Nut Glace: Good

Pecan Clusters: Good

Vanilla Fudge: Good

Mint Paste & Marshmallow: Good

**Sprill Top Buttercream:** Good

**Half Dipped Brazil Nut Caramel:** Good

**Assortment:** Good

**Remarks:** The finest assorted chocolates we have examined at this price in years. The quality of these chocolates is outstanding; the workmanship is also of the best. All pieces were different and of the finest ingredients. Cheaply priced at \$1.20 the pound. We have examined \$1.57 the pound chocolates that could not compare with these chocolates.

*for Better Marshmallows*

## the SAVAGE BEATER

... IS YOUR ANSWER. The Savage latest improved sanitary marshmallow beater is constructed with stainless steel tank, shaft, paddles and breaker bars—100% sanitary. This beater is considered



standard by manufacturers. Built for strength and durability, it assures perfect manipulation of each batch. Hundreds of users in the United States and foreign countries prefer the Savage Beater for its economy in operation and performance in production, because it saves time, space, and operating cost. Four 200 pound Savage Beaters will supply a mogul for continuous operation.

### THE FIRST COST IS THE LAST COST

- Unexcelled for volume and lightness
- Stainless construction—100% sanitary
- No corners for contamination
- Outside stuffing boxes—no leakage possible
- Maximum beating for volume
- Faster heat discharge from batch
- Creates volume suction of cold air
- Larger water jacket for quick cooling
- 6" outlet valve for quick emptying
- Less power needed with roller bearings
- Large two piece air vent—sanitary
- Direct motor drive
- Sizes available: 150 lb. or 80 gal. capacity  
200 lb. or 110 gal. capacity

SAVAGE oval type marshmallow beater also manufactured with stainless water jacketed, galvanized cast iron heads, paddles and breaker bars.

Since 1855



# SAVAGE BROS. CO.

2638 Gladys Ave.

Chicago 12, Ill.

## SUGAR REPORT

by Charles Fuchs

*Solution offered to Mr. Lawrence Myers, director of Sugar Division, in attempt to prevent higher refined prices this fall:*

On April 22nd, 1957, Mr. Lawrence Myers, director of the Sugar Division delivered an address before the Sugar Club of New York which very ably covered sugar conditions, both domestic and world, but above all discussed the problems arising from the revision of the Sugar Act, which went into effect last year. These changes helped bring about the 9.10 Eastern cane refined price which still exists, in spite of the fact that cane and beet sugars have sold most of the year in certain Midwest territory at prices 50¢ to 70¢ per cwt. below the Eastern cane level.

It is apparent that some new method of price control must be found to not only prevent further advances which are probable later this year, unless something is done quickly but also bring about at all times a more realistic and competitive price with certain midwest areas.

In his talk, Mr. Myers stated among other things: "I think you refiners and brokers could perform a real public service by making a study with recommendations on this problem before our hearing on 1958 requirements."

With this in mind we have written him a letter, synopsis of which follows: Two plans were proposed designed to relieve the annual year-end sugar shortage and attending high refined sugar prices in northeastern U.S. It was indicated that under the new sugar controls the northeastern shortage situation would become progressively worse than heretofore. We cited Fall 1956 prices of 8.50 raws and 9.10 refined as the highest seasonal prices since 1923.

The first suggestion offered was that the Department of Agriculture permit northeastern refiners to melt and store excess sugars for delayed distribution each year in December or earlier if necessary, to offset seasonal shortages in this area only. As an alternative to this proposal, it was suggested that the shortage might be remedied if the Agriculture Department would set aside a specified quantity of sugar, earmarked for sale in the northeast area only during the last quarter of each year. The exact amount to be set aside would be determined when estimating actual consumption requirements for each new year, as before announcement of the 1958 quota this December.

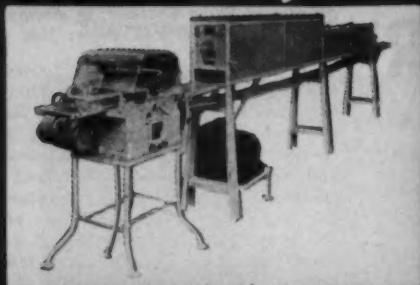
We pointed out that while it is agreed that it would be a mistake for anyone to assume that any fixed formula would always be successful year after year, he also insisted that it would be equally erroneous to assume that government or industry could continue to operate exactly as they have in the past under the newer sugar legislation.

Unless immediate attention is given to this problem, we warned, northeast sugar prices will continue to rise from the current eastern cane refined price of 9.10 to record-breaking highs later in the year.

Printed copies of the complete text of the Fuchs letter to the Department of Agriculture or the address made by Mr. Myers are available by writing to Charles Fuchs & Co., 120 Wall Street, New York 5, N.Y.

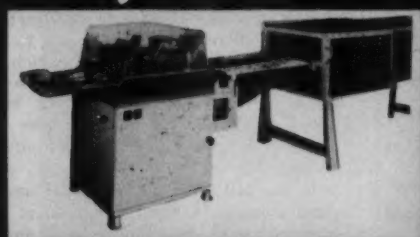


*All sizes*



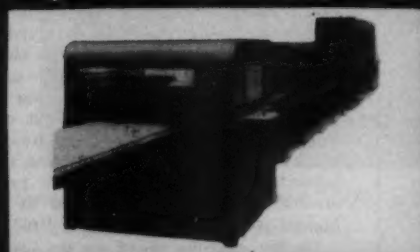
7"

*of coaters*



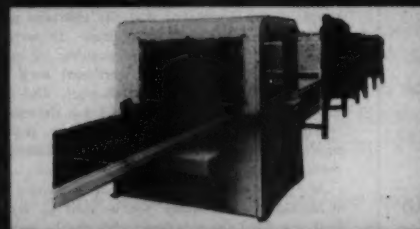
12"

*for all sizes*



32"

*of plants*



60"

by  
**"NIELSEN"**



Walter H. Kansteiner & Co.

Machinery Division

1737 W. Howard St.

Chicago 26, Ill. — BRiargate 4-2223

## Exhibitors Directory

with information on products to be on display, and representatives in attendance in each booth.

Floor plan of the exhibition hall showing location of booths is on page 61.

### NCA exhibition

Conrad Hilton Hotel, Chicago  
June 10, 11, 12, 13, 1957

ALBERT AIR CONVEYOR CORPORATION, 600-16th Street, Oakland, California. Booth 44. Dense-Flo-Air Conveyor. In attendance: Douglas Albert, Howard Kirschman.

THE ALUMINUM COOKING UTENSIL CO., INC. Wear-Ever Building, New Kensington, Pennsylvania. Booth 508. Transport and storage containers, drums, tubs, bowls, spatulas, bowl knives, display plans, steam jacketed kettles. In attendance: B. E. Hiles, L. E. Foreman, J. R. Scott, H. H. Pech, R. C. Deardorff, R. C. Hanisch, R. J. Dellaflora.

AMERICAN CHOCOLATE MOULD CO., INC., 173 Lafayette Street, New York 13, New York. Booth 510.

AMERICAN MAIZE PRODUCTS COMPANY, 250 Park Avenue, New York City 17, New York. Booth 309. Corn syrup and corn solids. In attendance: All bulk sales personnel and brokers.

AMERICAN VISCOSE CORPORATION, FILM DIVISION, 1617 Pennsylvania Blvd., Philadelphia 3, Pa. Booth 208. Various types of Avisco cellophane for use in candy packaging, with samples of actual application. In attendance: F. W. Spannagel, L. M. Young, C. R. Shaffer, W. J. Butler, H. J. Price, W. H. Robie, L. W. Schumaker.

LAMBORN & COMPANY, INC., 99 Wall St., New York 5, New York. Booth 106.

THE AMERICAN SUGAR REFINING COMPANY, 120 Wall Street, New York 5, N. Y. Booth 205. Domino cane sugars and sugar syrups.

ANHEUSER-BUSCH, INC., 721 Pestalozzi Street, St. Louis 18, Missouri. Booth 306. AB Brand corn syrups and AB brand starches. In attendance: A. E. Weber, Vice President of Yeast, Malt and Corn Products Division; R. F. Amacher, Sales Manager of Bulk Corn Products Department; W. J. Simms, Sales Manager of Western Region; R. T. Regan, Sales Manager of Eastern Region.

ATLANTIC GELATIN, DIVISION GENERAL FOOD CORPORATION, Hill Street, Woburn, Massachusetts. Booth 41. Gelatin. In attendance: C. H. Watson, General Manager; Dr. J. A. Dunn, Sales Manager; Arthur F. Tole, Field Sales Supervisor; William Kent, Salesman.

ATLAS POWDER COMPANY, Wilmington 99, Delaware. Booth 207. Sorbitol. In attendance: J. B. Byrnes,



E. J. Caruso, S. T. Cross, J. DeGroot, J. W. Dellard, N. D. Kennedy, W. H. Knightly, C. E. McLaughlin, J. H. Riddle, J. T. Zolper.

**FRANKLIN BAKER DIVISION OF GENERAL FOODS CORPORATION**, 15th & Bloomfield Sts., Hoboken, New Jersey. Booth 305. A variety of coconut products. In attendance: Graham T. Brown, W. L. Bonney and David E. Miller.

**BAYWOOD MANUFACTURING CO., INC.**, 2753-7 Stillwell Avenue, Brooklyn 24, New York. Booth 43. Wood products for the manufacturing and handling of candy plus material handling equipment. In attendance: A. L. Starace, President; D. A. Lapetina, Midwest Representative.

**PAUL F. BEICH COMPANY**, Bloomington, Illinois. Booth 103. The Whizolator, continuous frappe, marshmallow, and nougat process equipment. In attendance: Justin J. Alikonis, Harold Hillman, Charles Olson, William Beich, Al Schroeder.

**BLANKE-BAER EXTRACT & PRESERVING COMPANY**, 3224 South Kingshighway Blvd., St. Louis 9, Missouri. Booth 501. Samples of fruits and flavors for use in candies. We will offer as samples finished chocolates and other candies containing our fruits and flavors. Many new flavors and combinations of flavors will be offered. In attendance: Dr. and Mrs. Samuel H. Baer, Mr. Miller Winston, Mr. and Mrs. Albert H. Knese, Harry Johnson, Paul Semrad, Ben Peterson, C. R. Klokorn.

**THE BLOMMER CHOCOLATE COMPANY**, 600 W. Kinzie St., Chicago 10, Ill. Booth 512.

**BLUMENTHAL BROTHERS CHOCOLATE COMPANY**, Margaret and James Sts., Philadelphia 37, Pa. Booth 307. Chocolate and cocoa products. In attendance: Samuel K. Blumenthal, Henry Wolf, Hobart J. Thurber, Sr., B. S. Blumenthal, Hobart J. Thurber, Jr., Larry Blumenthal, C. R. Page, Clyde W. Sternberger, Russ Neville, C. R. Pariente.

**BRAZIL NUT ADVERTISING FUND**, 100 Hudson Street, New York City 13, New York. Booth 202. Brazil nuts and brazil nut candy. In attendance: T. R. Schoonmaker, Mrs. T. R. Schoonmaker.

**BUHLER BROTHERS, INC.**, 130 Coolidge Avenue, Englewood, New Jersey. Booth 401. SHA Pneumatic Cocoa Bean Breaker and Winnower—SPK Pneumatic Conveying System for Cocoa. In attendance: O. R. Schmalzer, Arthur Kohn, Ernest Beyeler, Hans Reber.

**JABEZ BURNS AND SONS, INC.**, 600 West 43rd Street, New York City 36, New York. Booth 14. Pictorial display of cocoa bean, nut, chocolate and confectionery processing equipment. In attendance: A. E. Hawkins, George L. Lingner, Barclay Spence, Frank Arscott and C. Nooteboom.

**BURRELL BELTING COMPANY**, 7501 N. St. Louis Ave., Skokie, Illinois. Booth 40. Glazed belting, for enrobers.

**CALIFORNIA ALMOND GROWERS EXCHANGE**, 18th and C Streets, Sacramento 8, California. Booth 505. Almonds and almond products. In attendance: Dale Morrison, Bob Clement, and Chris Mantikos.

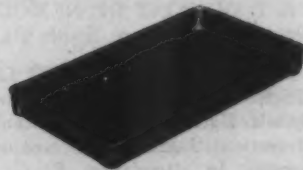
## NEW SANITARY TRAY

FOR TRANSPORTING, DRYING CANDY

MOLDED FIBERGLASS by **TOTELINE**



Toteline's molded fiberglass tray will end your sanitation problems. Unlike wood, Toteline trays are smooth, non-porous, seamless, retain no odor. They don't splinter. They clean so easily—just dip in hot water and they're ready for re-use. Model 519 stacking tray is recommended for transporting and drying candy centers. Write for Bulletin 519.



Model 476—TOTELINE tray for dust proof, air tight stacking.

# TOTELINE

made by MOLDED FIBER GLASS TRAY CO., Linesville, Pa.  
World's largest producers of reinforced plastic trays and tote boxes  
REPRESENTATIVES IN PRINCIPAL CITIES AND CANADA

CARAVAN PRODUCTS CO., INC., 35 Eighth Street, Passaic, New Jersey. Booth 618. Slab-cote. In attendance: Ira Grob and Alex Weber.

CARLE AND MONTANARI, INC., 95 Temple Avenue, Hackensack, New Jersey. Booth 507. Drops roller forming machine "CC", plastic forming machine "Royal/D", plastic forming machine "Super Royal", Sugar rope sizing machine "FI/F", Sugar batch pulling machine "TZ". In attendance: Ted Merckens, Charles Symon, Gordon Krupenny, Walter McCambridge, Graham Warlow, Caesar Mascherin.

FRED S. CARVER, INC., 1 Chatham Road, Summit, New Jersey. Booth 13. Carver cocoa presses. In attendance: W. S. Carver and C. D. Meylan.

CHOCOLATE SPRAYING COMPANY, INC., 2035-39 W. Grand Avenue, Chicago 12, Illinois. Booth 406. Continuous die pop machine with wrapping attachment—Chocolate decorator. In attendance: John E. Latini, Leo Latini, Edmond Latini, John Sheffman, Gilbert Holmberg.

CLINTON CORN PROCESSING COMPANY, Clinton, Iowa. Booth 504. A decorative background featuring fifty years of furnishing service and quality products from corn to the confectionery industry. In attendance: R. C. Wagner, President; H. A. Bendixen, Vice-President; A. C. Junge, Sales Manager; E. D. Cottrall; E. C. Alderson; J. E. Greninger; L. D. Buhner; R. C. Rau; W. F. Jackson; R. E. Mikkelsen; G. F. Heath; T. R. Miller; W. P. Hoaster; J. M. Newton; R. H. Jackson; J. M. Search.

CORN PRODUCTS REFINING COMPANY, 17 Battery Place, New York City 4, New York. Booth 407. Globe brand corn syrups, Rex brand corn syrups, Cerelease brand dextrose, Hudson River corn starch, Buffalo special moulding starch. In attendance: A. N. McFarlane, R. R. Adam, J. M. Coe, J. E. Walz, H. Francis, E. W. Schmitt, J. M. Krno, F. E. Von Bargaen, H. Heinstadt, S. W. Roberts, G. Matthews, J. P. Driscoll, W. S. Winter, R. F. Cohee, R. Smaus, R. Pearen, C. C. Clifford, C. Roy, A. T. Barlow, A. P. Jaeger, W. F. Fiedler, J. Kalyvas, G. McDonald.

CRESCENT METAL PRODUCTS, INC., 18901 St. Clair Avenue, Cleveland 10, Ohio. Booth 701 and 702. Candy drying racks, tub carriers, dollies, utility cabinets, special fabricated units. In attendance: George T. Baggett and Andrew Jindra.

CUSHION PACK, INC., 150 Fifth Avenue, Hawthorne, New Jersey. Booth 502. Cushioning pads and liners for candy boxes and packages.

THE DOW CHEMICAL COMPANY, Midland, Michigan. Booth 27. Saran wrap for many types of candy packaging uses.

E. I. DU PONT DE NEMOURS & COMPANY, Wilmington 98, Delaware. Booth 304.

Durkee famous foods, 2333 Logan Blvd., Chicago 47, Illinois. Booth 308. Confectioners coating, Paramount crystals, Hydrol, Plastek, Desiccated sweetened and toasted coconut, homogenized creamed and toasted creamed coconut. In attendance: E. G. Kaupert, S. F. Eaton, W. M. Cochran, G. N. Bruce, G. F. Atkinson, Frank Clegg, Richard Nickson, Jack Toll, John Carter, Freeman Machon, Milton Larson, W. A. Wymer, Paul Welker, Harry Davis.

FOOD MATERIALS CORPORATION, 2521 W. 48th Street, Chicago 32, Illinois. Booth 402. Exhibit will de-

pict "Flavors made to fit your products". In attendance: E. E. Feight, President; R. W. Koch, Executive Vice-President; E. N. Heintz, Jr., Vice-President; H. A. Ackermann, Vice-President; R. G. Richards, Salesman; A. J. Post, salesman; T. P. Ryan, Production Superintendent; L. E. Drusendahl, Salesman; R. N. Thomas, Purchasing Agent; G. L. Buckley, Salesman; J. D. Ingle, Technical Director.

J. W. GREER COMPANY, Wilmington, Massachusetts. Booths 404 & 405. Chocolate coating machine, Multi-Tier Cooling equipment, Vibra-Pac packing machine, chocolate conditioning equipment.

GROEN MANUFACTURING COMPANY, 4535 Armitage Avenue, Chicago 39, Illinois. Booth 603. Self contained steam jacketed kettle—no steam required. In attendance: F. H. Groen, Jr., Vice-President; F. J. Corcoran, General Sales Manager; R. F. Groen; J. H. Clegg; F. B. Stockscager.

GUNTHER PRODUCTS, INC., P. O. Box 108, Galesburg, Illinois. Booth 22. Confectionery whipping agents. In attendance: J. K. Gunther, R. C. Gunther, J. R. Turner, S. E. Kastelny.

HAMMONS PRODUCTS COMPANY, 217 Hammons Drive, Stockton, Missouri. Booth 23. Walnut kernels and hickory nut meats. In attendance: Clarence C. Cavender and King Engleman.

HANSELLA MACHINERY CORPORATION, Grand and Ruby Avenues, Palisades Park, New Jersey. Booth 19 and 20. Candy and packaging machinery. In attendance: Kurt Beyertz, Joseph L. Raffetto, W. C. Aaker, Guenther Schmidt, Jack Green.

HAYSEN MANUFACTURING COMPANY, 1305 St. Clair Avenue, Sheboygan, Wisconsin. Booth 403. New Model G single tube machine. In attendance: Henry Knoechel, Russ Clayton.

HOOTON CHOCOLATE COMPANY, 339-361 North Fifth Street, Newark 7, New Jersey. Booth 8. Chocolate coating, chocolate liquor and cocoa powder. In attendance: G. B. Dodd, President; E. J. Teal, Vice President; Lloyd S. Fiscus, Sales Manager; Silvio Crespo, Chief Chemist; Frank J. Wolf, Jr.; Roger C. Hubbard; W. R. Schoener.

THE HUBINGER COMPANY, 601 Main Street, Keokuk, Iowa. Booth 3. OK corn syrup, OK thin boiling starch, OK molding starch, OK Dri-Sweet corn syrup solids. In attendance: D. L. Tiger, Chicago Sales Manager; R. L. Krueger; A. M. Robinson; L. C. Watson; G. R. Underwood; J. T. Flahiff; Curt Aagre; H. S. Brightman; C. H. Lawrence; J. R. Myers, H. L. Peper, M. D. Zauke, J. T. Wallenbrock, L. G. Drusendahl, and Herbert Knechtel.

INSTITUTE OF AMERICAN POULTRY INDUSTRIES, Egg Solids Committee, 59 E. Madison, Chicago 2, Illinois. Booth 107. Egg solids. In attendance: Miss Margaret Lally, Lee Campbell and others.

J. A. JOFFE & COMPANY, 206 South 13th Avenue, Mount Vernon, New York. Booth 513. Candy decorations, icing flowers, sugar ornaments, popcorn molds. In attendance: Julian A. Joffe, Mr. and Mrs. Roland D. Joffe, Daniel E. Joffe.

WALTER H. KANSTEINER COMPANY, Machinery Division, 1737 W. Howard Street, Chicago, Illinois. Booth 18. 1-24" senior Nielsen Chocolate Coater, 1-12" Junior

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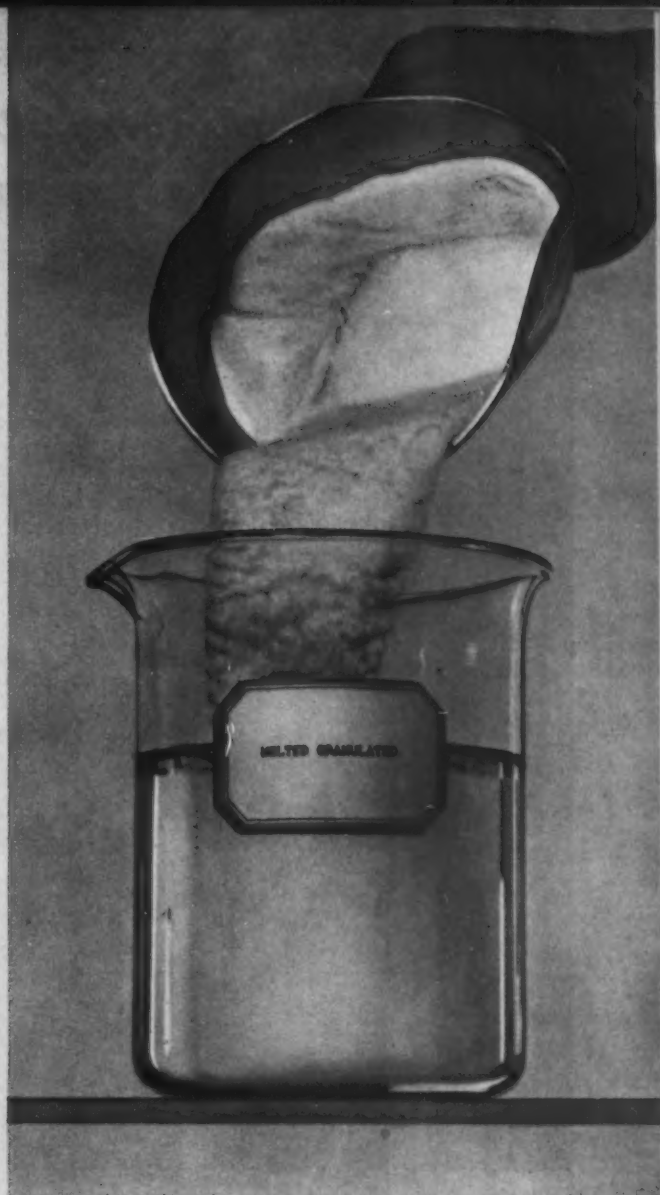
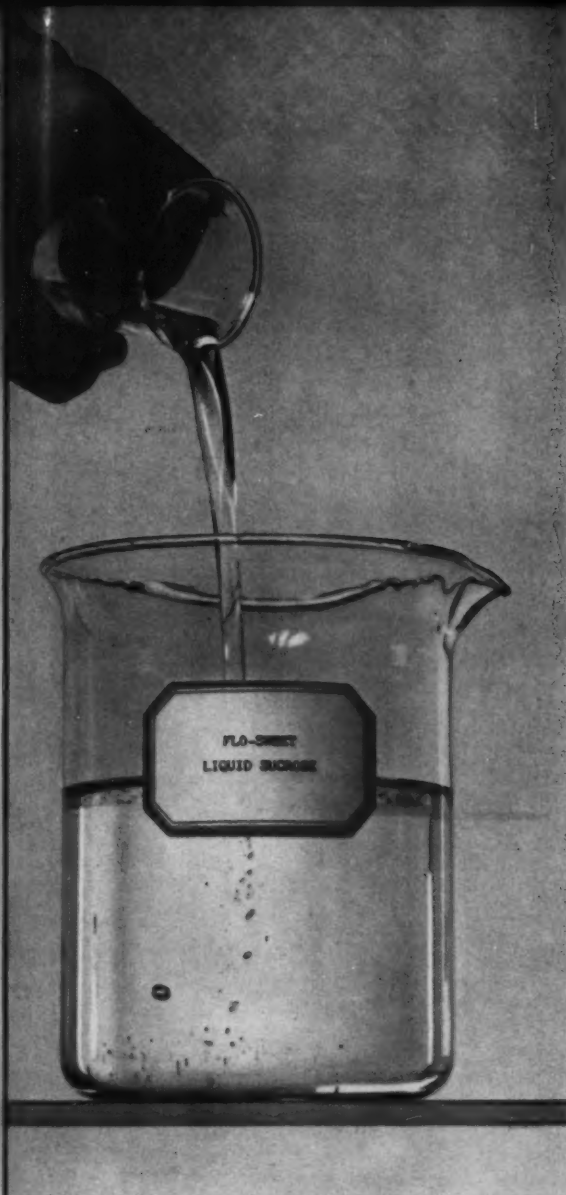
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# HERE'S *Quality* YOU CAN SEE!

What could look purer than the sparkling white crystals of granulated sugar?

It has long been the custom to compare the color of granulated—dry—with liquid sugar. But true comparison can be made only when the granulated is dissolved. These photographs, of samples in 1000-milliliter beakers, show what can happen: the brilliant white granulated actually shows much more color than Flo-Sweet! The illustration at right shows the color of a mixture of *three* commercial granulated sugars.

What does this mean to you? Just this: You can get a good

idea of the purity of a sugar by its color, since color is a fair indication of refinery efficiency.

With the current trend toward higher and higher quality in food products, only the best ingredients are good enough for the discriminating food producer. Whether you judge quality on the basis of color, taste, or laboratory analysis—we urge you to compare Flo-Sweet quality with any other sugar, liquid or granulated.

For here's true sugar quality . . . quality you can see!

**REFINED SYRUPS & SUGARS, INC.**

YONKERS, NEW YORK

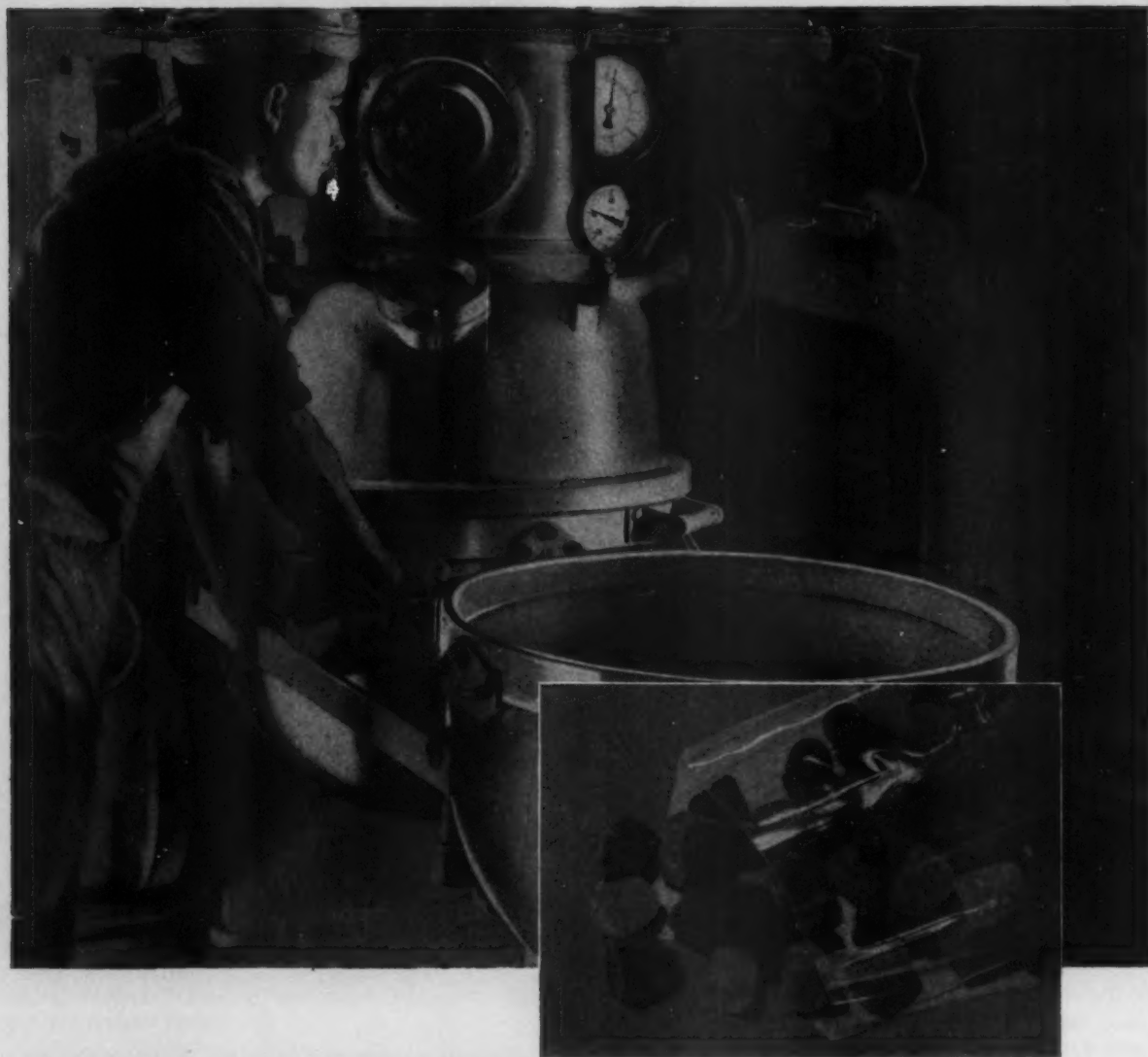
**FLO-SWEET**

FIRST IN LIQUID SUGAR

SERVING INDUSTRIAL SUGAR USERS EXCLUSIVELY FROM YONKERS • ALLENTOWN • DETROIT • TOLEDO



# *Sure Control for Quality Candy...*



**For greater tenderness, longer shelf life...**

## **CERELOSE® brand Dextrose**

For more tender, delicious candies that stay fresher longer, use Cerelose brand dextrose.

Adding Cerelose allows a higher concentration of sugars without increasing viscosity. In gums, Cerelose reduces sweating, shortens cooking time. In marshmallows the danger of fermentation and starch crust formation is decreased, body

and texture improved. Cerelose also makes caramels more tender.

Ask about the many advantages offered by corn sweeteners and starches. Technical assistance gladly furnished on request. Write to:



**CORN PRODUCTS SALES COMPANY**  
17 Battery Place, New York 4, N. Y.

Corn Products makes these famous products for the confectionery industry:

**GLOBE® and REX® corn syrups • BUFFALO® and HUDSON RIVER® starches • CERELOSE® brand dextrose**



Nielsen Chocolate Coater, 2-Tempering Kettles, 1-Press-master Extruder. In attendance: Walter H. Kansteiner, Sr.; Walter H. Kansteiner, Jr.; Gerard Ziffer.

A. KLEIN & COMPANY, INC., 113-119 West 17th St., New York 11, New York. Booth 26. Fancy boxes—for the confectioner exclusively. In attendance: Joseph Ehrenfeld, Adeline Ehrenfeld, William Michaelis.

H. KOHNSTAMM AND COMPANY, INC., 11-13 E. Illinois Street, Chicago, Illinois. Booth 408. Atlas brand certified colors in powder, paste and plastic cubes. Flavoring extracts and concentrated oils for every confectionery purpose. In attendance: Paul L. Kohnstamm, President; Robert H. Pulver, Executive Vice President; William H. Nelson; Andrew J. Torter, Mortimer Moss; Justin Pulver; Lewis F. Coplan; Thomas W. O'Brien; Franklin P. Hlavin; Frank Phillips, Maurice Devroye, Neil E. Thompson, Robert R. Oehler, Arthur D. Vogel, David H. Wyatt, Richard Kohnstamm.

LAMBORN & CO., INC., 222 W. Adams St., Chicago, Illinois. Booth 106. Bulk sugar handling exhibit. In attendance: Hoyt C. Bonner, Louis Jacques, Edw. Heidelberg, Ollie Kline, Bert Maguire, Walter Wheatley, Davie Campbell.

J. M. LEHMANN COMPANY, INC., 550 New York Avenue, Lyndhurst, New Jersey. Booth 6. Chocolate and confectionery machinery photos and literature. In attendance: C. B. Hoffman, Vice President; C. Dittmann, Sales Service; C. W. Muller, Sales Engineer.

LYNCH CORPORATION, 2304 Crystal Street, P. O. Box 271, Anderson, Indiana, Booth 45.

The MANUFACTURING CONFECTIONER, 418 North Austin Blvd., Oak Park, Illinois. Booth 28. The Manufacturing Confectioner, Candy Packaging, Candy Equipment, Purchasing Executives' Number, Books, Candy Buyers' Directory. In attendance: P. W. Allured, Stanley Allured, Allen Allured, James Allured, Wesley Childs, May Seelman.

MERCKENS CHOCOLATE COMPANY, INC., 155 Great Arrow Avenue, Buffalo 7, New York. Booth 25. Chocolate Coatings, Cocoapowders, chocolate novelties. In attendance: James P. Gray, R. E. Chumasero, Jr., August Merckens, Lawrence E. Merckens, Harold Oskamp, William E. Merckens, Harvey W. Merckens, M. D. Handler, E. G. Buchanan, Thomas J. Smith, Gardner E. Beach, Chase C. Colborn.

MERCURY HEAT SEALING EQUIPMENT COMPANY, 2601-21 North Howard Street, Philadelphia 33, Pennsylvania. Booth 38. Verti Pak and Vacuumatic label sealing machine for weighing, filling and sealing cellophane or polyethylene bags and attaching labels. In attendance: Jack Dreeben, O. L. May, Robert Schrader.

MERRILL LYNCH, PIERCE, FENNER & BEANE, 70 Pine Street, New York 5, New York. Booth 10. News and quotation ticker, statistical and market reports, market board.

MIKROVAERK A/S, Sydmarken 32-38, Soborg, Copenhagen, Denmark. Booth 17. Continuous conche and liquifier. Chocolate pumps. Illustrative material of the continuous automatic Jensen chocolate moulding lines. In attendance: O. Prasz and Karl Magnussen.



**MERCKENS CHOCOLATE COMPANY, INC.**

155 Great Arrow Avenue, Buffalo 7, New York

BRANCHES AND WAREHOUSE STOCKS IN

BOSTON, NEW YORK, CHICAGO, LOS ANGELES, OAKLAND, SALT LAKE CITY, SEATTLE

**MILPRINT, INC.**, 4200 N. Holton Street, Milwaukee 1, Wisconsin. Booth 302. Actual packages will be on display which were converted by Milprint, Inc. for the leading confectioners throughout the United States. Full line of flexible packaging will be on display. In attendance: William Heller, Sr., Bert Heftner, Roy Hanson, Lester Zimmerman, Harry Jones, Jim Heller, Jim Perkins, John Bode, Cliff Williams, Abe Jacobs, Elmer Angsman, Dave Callahan, Dave Dooley, Jack Sevick, and DeWitt Hull.

**MOLDED FIBER GLASS TRAY CO.**, Linesville, Pennsylvania. Booth 21. Molded fibreglass trays of many types and sizes for a variety of uses in candy factories.

**MURNANE PAPER COMPANY**, 1510 North Kostner Avenue, Chicago 51, Illinois. Booth 29. Murnane "Lint-Free" base cards, rolls and boats both plain and "H. T. Non-Stick" treated for the automatic packaging of candy bars—also dividers, partitions and layers for box or bag packaging. In attendance: J. H. Murnane, Frank J. Murnane, J. Hobie Murnane, Frank H. Keegan, Walter Flintrup, George Kells, Robert Walsh, Ralph Hartmann.

**NATIONAL EQUIPMENT CORPORATION**, 153 Crosby Street, New York City 12, New York. Booth 30, 31, 32, 33 and 34. High speed Rose Form, cut and wrapping machines as well as High Speed Individual Wrappers (shown for the first time in U. S. A.) National Case Sealers, Speed Wrap, Puller, 3000 lb. Cooker, Staggered Pump Bars. In attendance: Joseph Greenberg, Herman Greenberg, W. H. Kopp, Allen Carter, Charles Balin, Mr. Foster, George S. Perkins, M. M. Guggenheim.

**THE NESTLE COMPANY, INC.**, 2 William Street, White Plains, New York. Booth 7. Nestle's-Chocolate Coatings and Liquors-Alps Milk Chocolate Breakup Mould-Icecap Colored Coatings-Snowcap Coating. In attendance: H. J. Wolfisberg, T. F. Corrigan, R. H. Wilson, G. W. Clapper, A. T. Newth, J. R. Meagher, J. E. Clarke, J. E. Conley, E. E. Ebel, R. A. Fife, J. J. Flynn, E. H. Lewandowski, S. Katzman, J. K. McGrath, A. M. Mullens, J. O. Grombach, A. L. Shirley, H. S. Watts, D. B. Wells, Dr. A. Kentie.

**THE NULOMOLINE DIVISION OF AMERICAN MOLASSES COMPANY**, 120 Wall Street, New York City 5, New York. Booth 203. Samples of heat resistant and year-round candies for the wholesale and retail manufacturer, with formulas used in developing candies on display. Samples of Nulomoline, Grandma's Unsulphured Molasses and Convertit available, and technical and practical candymakers present for consultation. In attendance: Karl Fromm, Albert Gibbons, Frank Trager, B. Minton, Lorraine Grimmins, A. Monti, F. Janssen, James A. King.

**PEERLESS CONFECTIONERY EQUIPMENT COMPANY**, 158 Greene Street, New York City 12, New York. Booth 301. Special Hi Speed Caramel Cooker, Gabel Plastic Machine, Hansel 6-roll Automatic batch-roller, Hansel Sizer, Hansel Center Filler. In attendance: Samuel Schwartz, Norman Schwartz, H. Kruse.

**PENICK AND FORD, LTD., INC.**, 420 Lexington Avenue, New York City 17, New York. Booth 2. Corn syrups and corn starches. In attendance: D. P. O'Connor, O. H. Tousey, H. A. Horan, W. S. Russell, P. G. Wear, F. J. McCrosson, L. S. Poer, S. F. M. Maclaren, J. A. Kooreman, W. J. Brown.

**QUINCY PAPER BOX COMPANY**, Quincy, Illinois. Booth 105. Fancy candy boxes. In attendance: Paul Jochem, M. A. Jochem.

**RACINE CONFECTIONERS' MACHINERY COMPANY**, 15 Park Row, New York City 38, New York. Booth 210. Racine stick candy sizing, twisting, and cutting machine, Racine stick candy conveyor, Racine candy cane machine, Racine junior depositor, Simplex Hydraulic lift gas vacuum cooker Model H-1. In attendance: Kenneth Bieneman, Dick Bird, Harold Davis, Claude J. Covert, William Genich, Jack Green, George Hislop, Sidney Nelson, Leonard Shapiro, George Scheu.

**REFLECTOTHERM, INC.**, 26 E. University Avenue, Cincinnati 19, Ohio. Booth 39. Radiant cooling tunnel. In attendance: Edwin H. Morgan, Jr.; Edwin H. Morgan, III; George B. Hislop; Clarence A. Mills.

**F. RITTER & CO.**, 4001 Goodwin Avenue, Los Angeles 39, California. Booth 16. Flavoring materials. In attendance: Mr. Allan E. Katz, Dr. Karl Lorenz.

**ROSS AND ROWE, INC.**, 50 Church Street, New York City 7, New York. Booth 1. Yelkin Standardized Lecithins. Placto Milk and Cream Products, Fries flavors, Mil-lait. In attendance: W. F. Schlesinger, J. E. Lynch, Oscar M. Stout, W. K. Hilty, J. G. McAuley.

**SAVAGE BROTHERS COMPANY**, 2638 Gladys Avenue, Chicago, Illinois. Booth 206. All stainless steel marshmallow beater, Model S48 Fire Mixer, Savage continuous hard candy cutter, small copper coating pan. In attendance: R. J. Savage, Jr.; M. A. Savage; W. P. Halpin; R. W. Emerson; M. J. Linden.

**F. J. SCHLEICHER PAPER BOX COMPANY**, 1811 Chouteau Avenue, St. Louis 3, Missouri. Booth 509. The very latest in fancy set up candy boxes including full assortment of heart boxes for Valentine Day. In attendance: Frank H. Schleicher, William J. Engel, Lawrence S. Schleicher, Allen K. Schleicher, Robert A. Smiley.

**SETTER BROTHERS**, Cattagarus, New York. Booth 12.

**W. C. SMITH AND SONS, INC.**, 2539 N. 9th Street, Philadelphia 33, Pa., Booth 503. Golden anniversary chocolate coater, chocolate tempering kettle, stainless steel cream beater, Auto-Former—cream center former & assorted center box packer. In attendance: W. C. Smith, Jr.; S. Charles Jacques; Les D. Rusendahl; Ted Merckens; B. E. Blake.

**A. E. STALEY MANUFACTURING CO.**, Decatur, Illinois. Booth 303. Products from corn, including starches and syrups.

**STANDARD BRANDS INCORPORATED**, 625 Madison, New York 22, N. Y. Booth 24. Refined corn starches and syrups.

**SUGAR INFORMATION, INC.**, 52 Wall Street, New York 5, New York. Booth 104. Information on what's happening to sugar and other background on sugar and sugar-containing foods of special interest to the candyman. In attendance: Neil Kelly, David Quinlan, Margaret Zeller.

**SUNKIST GROWERS**, 616 East Grove Street, Ontario, California. Booth 506. Pectin, oil of lemon, oil of orange.



...FRESH from America's Dairyland

## marshmallow made with SWIFT'S SUPERWHIP GELATIN

A century of experience in producing quality confectionery products fresh from America's Dairyland played a major role in the Robert A. Johnson Company's selection of Swift's Superwhip Gelatin. This leading Milwaukee firm uses Superwhip exclusively in their chocolate covered CARAMEL WHIP because they have found that Superwhip helps to give them the stability needed to help preserve a tender, yet springy texture—so characteristic of their product.

If you're looking for the means to produce a finer marshmallow, try Superwhip. The superiority of Superwhip shows in its uniformity of performance from shipment to shipment . . . and in the longer shelf life of the marshmallow.

Use the coupon below for further information or a trial drum.

ONE TRIAL IS BETTER THAN A THOUSAND CLAIMS

*To Serve Your Industry Better*



chocolate covered  
**CARAMEL WHIP**

NET WEIGHT 5 LBS.

SWIFT & COMPANY, Gelatin Department GE-1  
4115 Packers Avenue, Chicago 9, Illinois

Please send us:

☐ Information on Swift's SUPERWHIP Gelatin

☐ 100# trial drum of Swift's SUPERWHIP Gelatin at the large drum price . . . to be tested in our operations. We understand, if not fully satisfactory, it may be returned for credit at your expense.

FIRM NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

YOUR NAME \_\_\_\_\_

*This offer expires March 31, 1957*



**SUPERMATIC PACKAGING CORPORATION**, 305 Third Ave., Newark 7, New Jersey. Booth 410. Wrapping machines for a wide variety of candy products.

**THE TRIUMPH MANUFACTURING COMPANY**, 3400 Spring Grove Ave., Cincinnati 25, Ohio. Booth 37. 1-Kandy Kraft belt depositor. 1-Candy Maid tray depositor. In attendance: Ralph F. Foster, Paul Garthaus, Alex Pappas, Delbert Williams, Alfred B. Cassidy, Sr., Howard Ottman, Alfred B. Cassidy, Jr.

**C. E. TWOMBLY CO.**, 146 Mystic Ave., Medford, Massachusetts. Booth 511. In attendance: Wm. E. Smith, Sales Manager, Elmer Anderson, Bill Herdrick, Lee Douglas, George Twombly, President.

**UNION SALES CORPORATION**, Columbus, Indiana. Booth 204. Products from corn. In attendance: J. I. Miller; E. B. Pulse; G. W. Anderson; D. Foster; P. L. Gournio; J. A. McLean; J. S. Ryan; W. W. Bissell; C. F. Grathen; G. C. Dampier; C. W. McCrary.

**VACUUM CANDY MACHINERY COMPANY**, 15 Park Row, New York City 38, New York. Booth 209. Racine stick candy sizing, twisting, and cutting machine; Racine stick candy conveyor; Racine candy cane machine; Racine Junior Depositor; Simplex Hydraulic lift gas Vacuum cooker Model H-1. In attendance: Kenneth Bieneman, Dick Bird, Harold Davis, Claude J. Covert, William Genich, Jack Green, George Hislop, Sidney Nelson, Leonard Shapiro, George Schen.

**VOSS BELTING AND SPECIALTY COMPANY**, 5645 N. Ravenswood Avenue, Chicago, Illinois. Booth 5. 3M600 Mylar Kleer Gloss, M6000 Mylar, No. 11 White,

Green and Black Glazed, No. 3 Hi-Gloss—all tunnel belts. Vosstex Rubberized belts, Canvas specialties, etc. In attendance: Robert J. Voss, Henry W. Voss, A. T. Stevens, Warren Frandsen, Ted Merckens, Duke Powell, Frank A. Gusinde, Edward T. Kordt, Harry Jenks, Mark Wixon, Norman Germaine.

**WEBER MARKING SYSTEMS**, Division of Weber Addressing Machine Company, Inc., 207 Elmhurst Road, Mount Prospect, Illinois. Booth 42. Machines for printing, addressing and marking labels, tags. Hand duplicating devices for addressing and marking labels, tags and direct-to-carton. Shipping stencils that can be typed or handwritten, and prepared with invoice writing procedures. In attendance: Jim Crassweller, Art Wagner, Joseph Weber, C. E. Ritter, William Darras.

**T. C. WEYGANDT COMPANY**, 165 Duane Street, New York City 13, New York. Booth 101. Chocolate Moulds "OKA" Marzipan Former; illustrations of Chocolate machinery. In attendance: Max Kaderli, President; Mrs. Edith B. Kaderli, Vice-President.

**WHITE STOKES COMPANY INC.**, 3615 South Jasper Place, Chicago, Illinois. Booth 9.

**THE WOODMAN COMPANY, INC.**, 647 E. College Avenue, Decatur, Georgia. Booth 201. Twin scale Plura-matic net weigher, Air-weigh-matic bag filler, Rotary Pak-Off, Klo-Sealheat-Sealer. In attendance: J. L. Moore, R. L. Young, H. H. Stephens, Larry Gill, Hugh Wood, R. L. Rumsey, Jimmy Hendricks, C. D. Adams.

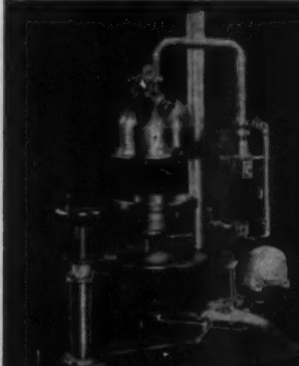
**WRIGHT MACHINERY COMPANY**, Corner Holloway and Calvin Streets, Durham, North Carolina. Booth 108. Wright Junior Weigher. In attendance: J. B. Mahoney, William Eadie, J. C. Amato.

#### Lower Lobby Booths

NCA convention in San Francisco in 1958. Booth 1A  
U. S. Department of Agriculture. Booth 1B  
U. S. Department of Commerce. Booth 1C

#### Trade Press

The Manufacturing Confectioner, Oak Park, Ill. Booth 28.  
Confectionery-Ice Cream World, New York, N. Y. Booth 4.  
The Confectioner Publishing Co., Milwaukee, Wis. Booth A.  
Candy Industry, New York, N. Y. Booth 409.



**MODEL H-1 GAS VACUUM COOKER**

Hydraulic kettle lift and mechanical kettle transfer make batch handling a one-man operation. Excellent where steam is not available for making hard candies and fondants. Learn the facts—

**Booth 209-210  
NCA Convention**

**VACUUM CANDY MACHINERY CO.  
RACINE CONFECTIONERS' MACHINERY CO.**

15 PARK ROW NEW YORK 38, N. Y.

**ALWAYS AT YOUR SERVICE**

**In Cocoa Since 1899**

**EMIL PICK CO.**  
COCOA BROKERS

80 WALL ST. NEW YORK, N. Y.  
Bowling Green 9-8994

**COCOA BEANS - COCOA BUTTER**  
Cocoa and Chocolate Products



# New dairy solids for the confectionery industry

by J. REGER

Western Condensing Company

**T**he time allotted for this discussion is so short to provide you with detailed information on all of the various forms of milk products available to you and general information on how to use each of these dairy solids to your best advantage. However, mention can be made of the various types of milk products produced, how they differ in gross composition, what you can expect from the major constituents of milk, and the advantages, both functional and economical, of powdered dairy products with particular emphasis on the newer dairy solids. The latter includes sweet dry whey; whey containing added natural milk fat processed to produce a strong, full milk flavor; whey whipping agents; and lactose, or pure milk sugar.

## Types of milk products

All of you are acquainted with fluid whole milk and know that when approximately half of the water is evaporated you then have plain condensed whole milk, and with sugar added it is made into sweetened condensed whole milk. If condensed whole milk, in turn, is canned, sealed, and subjected to sterilization temperatures, the finished product then is called evaporated milk. Plain condensed whole milk can be converted also into roller or spray dried whole milk powder.

When the fat from whole milk is removed by separation, you obtain cream and skim milk. Butter, butter oil, plastic cream, frozen cream, and so forth, are products derived from fluid cream.

Fluid skim milk can be condensed and used as such, or sugar can be added to the plain condensed skim milk to give you sweetened condensed skim milk. Plain condensed skim milk can be converted to either roller or spray dried nonfat milk solids.

The products mentioned above are the forms of milk solids with which you are well acquainted. The following dairy solids discussed are new, not in origin, but are comparatively new in use by the candy industry.

When a small amount of rennet enzyme is added to whole milk and the milk warmed, the casein protein of the milk coagulates or sets up. In this process, fat is entrapped in the curd that is formed. The balance of the non-curding milk constituents is termed whey. The curd is further processed, stored or aged, until the desired cheese flavor develops according to the type of cheese that was made. The whey, which is rich in milk sugar, albumin type protein, milk minerals, and water soluble vitamins can be further processed to a spray dried powder in the same manner as non-fat milk solids. This product will be referred to as sweet dry whey.

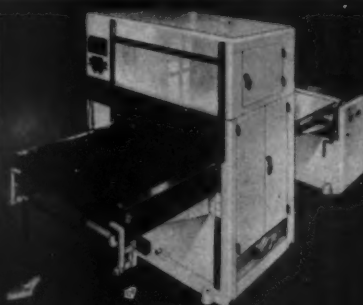
Whey can be de-proteinized by appropriate heat and acid treatment. When the protein material is removed, the milk constituents remaining are lactose and milk salts. This solution can be concentrated until the lactose or milk sugar crystallizes out. Further refinement by recrystallization results in pure milk sugar.

There is a great deal of published literature available in which the processes used for the production of the above named dairy products are discussed in detail. Both gross and detailed composition of these milk products also can be found readily in the literature and will not be discussed here. A few remarks will be made shortly, however, on the gross composition of some of the milk products you use. First your attention is called to two specialty products derived from whey.

There is a patented method employed whereby whey is processed to remove its anti-foaming agents, and the resulting product is a whipping agent. This particular whipping agent has many of the useful properties of egg albumin and soy whipping agents, and is used in conjunction with them or with gelatin.

In past years, you have seen whole milk powders available in which the butterfat has been subjected to controlled enzymatic activity to produce a desirable rancidity. These products have

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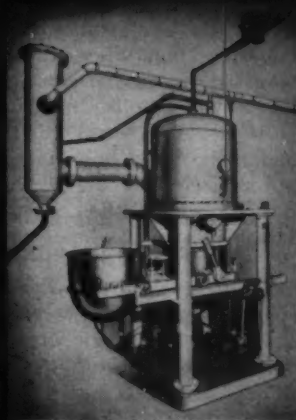
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been used primarily as a flavoring agent in the manufacture of chocolate coatings. A product similar in functional value and made up of whey with added pure milk fat, processed to bring out a premium full milk flavor, recently was introduced to the coating manufacturer and to the candy processor for use in fudge and chocolate toppings. The milk fat in this product also is subjected to a closely controlled enzymatic process.

#### Composition of Milk Products

Let us look for a moment at the gross composition of various milk products mentioned, omitting the specialty products. We will just consider the butterfat, milk solids not fat, non-lactose sugars, and water per 100 pounds of product. These data are compiled in the table below:

#### Function of Major Milk Constituents

The above table was broken down into the major constituents important to you as a candy processor. In 1951, Mykleby discussed the functions important to you of each of the major constituents of milk and these will be reviewed briefly.

All of the solids of milk contribute to its nutritional value and will not be elaborated upon, as you are very familiar with the important nutritional benefits of milk.

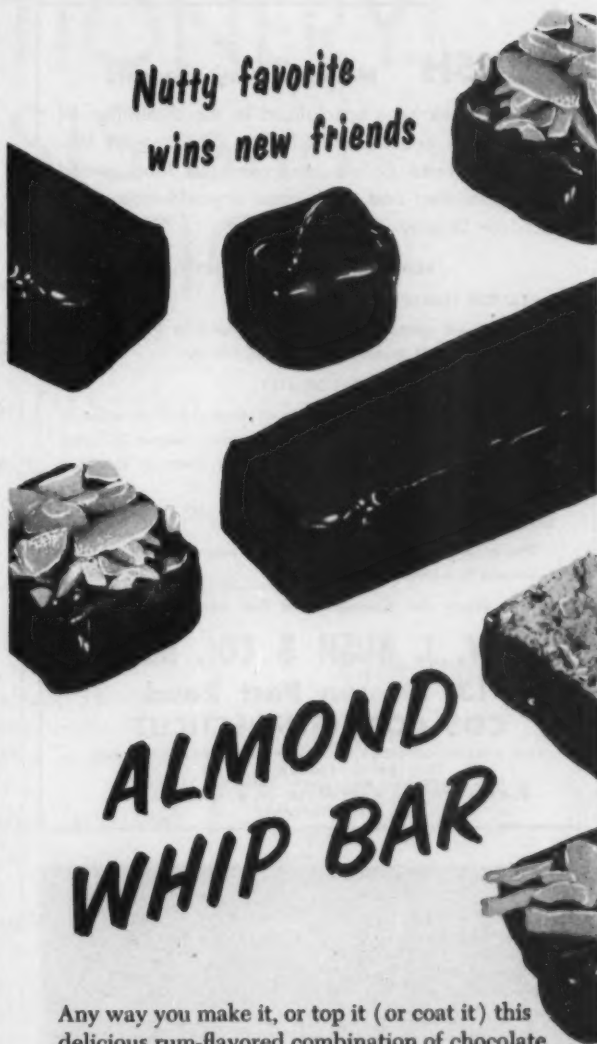
You appreciate that one of the important functions of butterfat is to impart milk flavor. The flavor of candy is probably improved more by the inclusion of butterfat than by the use of any other single ingredient. Butterfat also is important in providing better emulsification because of the phospholipides contained in butterfat, particularly lecithin.

Milk proteins are important for the proper development of body, texture, and flavor. Casein protein has excellent water absorbing properties and provides much of the structural characteristics attributed to milk solids. The non-casein protein, which is largely of the albumin type, is important for smoothness of body and texture.

As you may know, the preheat treatment given milk prior to condensing and/or drying is very important to bakers, cottage cheese manufacturers, and other food processors. Nonfat milk solids, for example, must receive a high preheat treatment if it is to function properly in bread baking. The same milk product would make a very poor cottage cheese. In each instance, it is the state to which the non-casein protein has been denatured or not denatured that is important. Consequently, both high heat and low heat nonfat milk solids are available. The writer is not aware of any data or experimental work in which the heat treatment given milk solids influences its candy making qualities. Perhaps some of you have done some work on this. You can be assured that such information would be of significant interest to many of us. At any rate, some further comment on this will be made later in this discussion.

Lactose, or milk sugar, is the major constituent in milk products for the production of an attrac-

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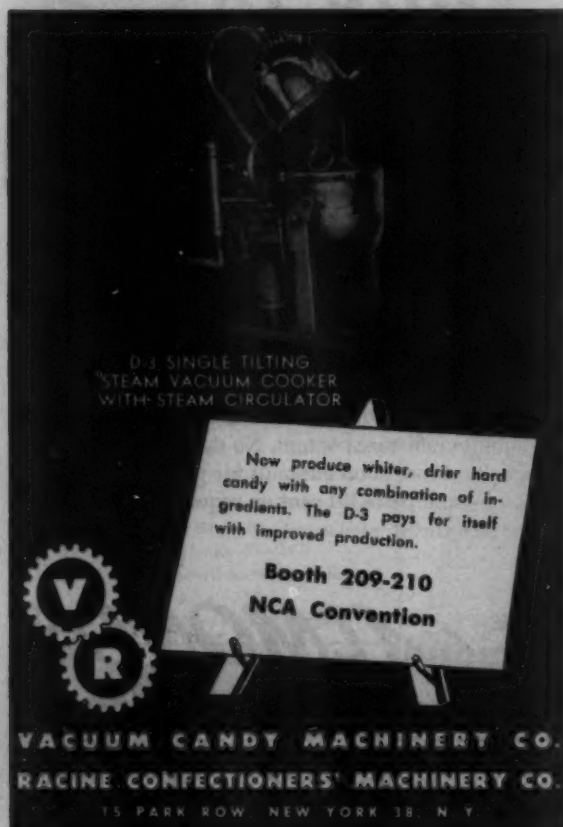
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tive golden-brown color and caramelization. It is only one-sixth as sweet as cane sugar and, therefore, finds considerable utility in reducing excessive sweetness of products such as fondant, icings, and other high sugar candy bases. In past years, it was much too expensive to fit into the economic picture of the candy processor, but today its price has dropped where it can be given very serious consideration.

Milk salts are important for their nutritional value and possibly contribute to stabilization because many of the natural salts of milk are considered stabilizing salts.

Water makes up a considerable portion of fluid milk products and of condensed milks. Inasmuch as most candy pieces are low in moisture, much of the water in the fluid or condensed products must be evaporated in the cooking process and, therefore, it is not a desirable constituent. In addition, water adds materially to transportation costs.

### Functional and Economic Aspects of Powdered Milk Products

All of you are acquainted with powdered whole milk and nonfat dry milk from both a performance and economic standpoint. In general, you have been very pleased with their performance in such items as fondant, icings, compound coatings, and milk chocolate. However, several of you have tried using powdered milks in caramel, fudge, taffy, and similar items. The bulk of these products are subjected to high temperatures during some stage of processing. Accordingly, when these dried milk products were added directly to hot syrups or to concentrated syrups just prior to cooking, they reportedly did not go into solution rapidly enough to allow complete hydration of the protein, the net result being grainy or curdy milk particles in the finished candy and lack of full milk flavor. Powdered milks can be readily reconstituted and several methods of reconstitution are being successfully employed by many food processors. Costwise, the equipment involved is comparatively inexpensive. The use of reconstituted powdered milks, thus far, has been limited. Consequently, sweetened condensed milk continues to be the principal milk product used in candy plants for these pieces.

There are several good reasons, however, why you want to use powdered milk products:

- (A) Powdered milk products from reliable sources are exceptionally uniform in quality, because they are rigidly controlled and must meet the very exacting specifications set up by USDA.
- (B) Storage space in many plants is often inadequate. Powdered milk products occupy a great deal less space per 100 pounds of milk solids than any condensed or fluid milk product.
- (C) Powdered dairy solids are easy to handle even in cold weather, as there is no "flow" problem.
- (D) Losses due to bacterial or mold spoilage are eliminated.
- (E) Powdered dairy solids are available in many different forms ranging in composition from that



# CONFECTIONERY ANALYSIS and COMPOSITION

By

Stroud Jordan, M.S., Ph.D.

and

Katheryn E. Langwill, M.S., Ph.D.

**T**his volume, first published in 1946, is still the only published reference work on the subject of confectionery analysis. The pioneering work done by Dr. Jordan remains the standard in the field, making a second printing of his book necessary. This printing is in all respects identical to the first printing.

This volume concerns itself with applicable data that covers the composition of basic raw materials as well as that of the finished confections in which they have been employed.

In assembling this volume reference is made to applicable methods. Where satisfactory methods of analysis are of general knowledge they are incorporated by reference. All specially developed methods and procedures are incorporated in detail.

In the reconstruction of formulas from analytical data, certain basic assumptions must be made, and these are thoroughly explained. The second part of this volume deals with the several confection groups, and full discussion of particular analysis and calculation of composition problems of each group are discussed.

The book is expected to be ready for distribution by June 1. Use the order form below, your book will be mailed as soon as copies are available.

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Colloidal Materials	(Ch. 7)
Nuts and Fruits	(Ch. 8)
Acids	(Ch. 9)
Incidental Materials	(Ch. 10)
Reconstructed Formulas	(Ch. 11)
Hard Candy	(Ch. 12)
Coated Candies	(Ch. 13)
Sugar Cream	(Fondant Ch. 13)
Fudge	(Ch. 14)
Caramels and Toffees	(Ch. 15)
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found in whole milk to pure milk sugar. Thus, you can use that form of dairy solids which best suits your individual need for any specific candy piece. Perhaps you may want to utilize the functional properties of casein and of lactose in a specific piece. In that instance, you may prefer a blend of nonfat milk solids and sweet dry whey. In fact, once you fully appreciate the functional benefits of each of the major constituents of milk, you will be able to produce new candies through utilization of blends of several different powdered dairy solids. Such blends will be superior from a functional standpoint, produce a better candy, and cost less to make.

(F) Use of powdered dairy solids results in very substantial savings in ingredient costs. For example, sweetened condensed whole milk is available today in quantity at about \$14.50/100 pounds. It contains approximately 8.5% butterfat, 20% milk solids not fat, 42-1/2% sugar, and 29% water. This same product made by reconstituting nonfat milk solids and adding sugar and butterfat costwise could be broken down as follows:

20 lbs. NFMS*	@ 16¢/lb. = \$ 3.20
8% lbs. Butterfat***	@ 70¢/lb. = 5.95
42% lbs. Sugar	@ 9¢/lb. = 3.82
	Total \$12.97

When this same formula is further broken down so that 50% of the nonfat dry milk solids is in the form of sweet dry whey, the cost figures, then, are as follows:

10 lbs. NFMS*	@ 16¢/lb. = \$ 1.60
10 lbs. Sweet Dry Whey**	@ 9¢/lb. = .95
8% lbs. Butterfat***	@ 70¢/lb. = 5.95
42% lbs. Sugar	@ 9¢/lb. = 3.82
	Total \$12.32

At a cost of \$12.32 per 100 pounds, as compared with the \$14.50 per 100 pounds for sweetened condensed whole milk, you realize a savings of \$2.18 per 100 pounds. On a 30,000 pound truckload basis, this would represent a savings of \$654.00.

\*Government Support Price

\*\*TL Price—Midwest Source

\*\*\*Calculated on Wholesale Butter Price of 56c/lb.

As mentioned previously, you have tried adding milk powders directly to your candy in much the same manner as sweetened condensed milks, but obtained very unsatisfactory results. Others of you have tried reconstituting milk powders to make concentrates and have even added sugars to simulate sweetened condensed milks in composition; yet, you were not able to get the same full flavor in your candies. On the other hand, several candy manufacturers have successfully replaced a portion of the milk solids not fat in their candy with sweet dry whey. In fact, excellent butterscotch and caramel toppings have been made in which

reconstituted sweet dry whey accounted for all of the milk solids not fat. Very fine flavored fudge also has been produced using reconstituted sweet dry whey as the only source of milk solids not fat.

Sweet dry whey is casein-free. Casein is heat coagulable and may account for some of the difficulties you have encountered with nonfat milk solids. The baker, cottage cheese processor, ice cream maker, soup processor and others in the food field all are cognizant of what influence preheat treatment of milk has on its performance in their specific applications. Each knows what type of milk he wants and what treatment the milk he uses should have. Apparently, this type information is not available to candy processors. Preheat treatment of milk may not be important, but there should be a solution to the problem of how the candy processor can utilize powdered milks and get the same performance and flavor obtained with sweetened condensed milk. Cooperative research between the candy and powdered milk products industries assuredly will provide the answer.

One approach to this problem would be to start with lactose or sweet dry whey, for example, because these do not contain casein protein and because we know sweet dry whey is being used successfully to replace varying amounts of the milk solids not fat in sweetened condensed milks. After becoming familiar with its performance, blends of whey and nonfat milk solids can be tried. Tests should include nonfat milk solids having re-

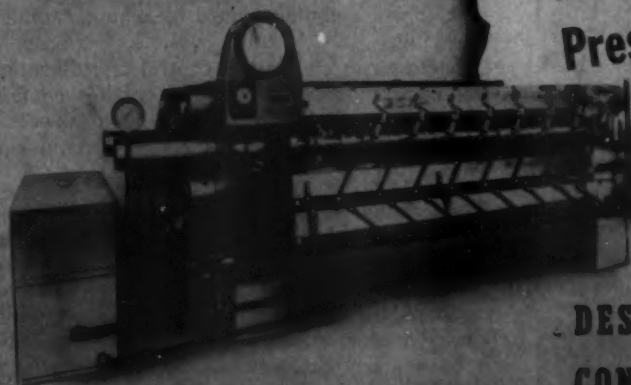
ceived heat treatments varying from pasteurization temperatures to sterilization temperatures.

Blends of sweet dry whey and the nonfat milk solids should vary in ratio. You can be certain that there are many milk products processors willing and happy to cooperate with you on a study of this type. Once the problem is resolved, you will be able to enjoy all of the benefits of powdered milk products and realize the type of substantial savings discussed earlier.

#### Sweet Dry Whey

In 1940, Webb & Hufnagel<sup>2</sup> of the U. S. Department of Agriculture published a report on the use of whey solids in candy making. They published formulas for caramel, fudge, and taffy in which whey solids constituted a portion of the nonfat dairy solids. The following year, Webb<sup>3</sup> described a new confection—"Wheyfer"—which was made from sweetened condensed whey, precooked dry cereal, and nuts. He also included formulas for fudge, caramel, and taffy using whey solids. The advantages found for whey included its ability to increase shelf-life, improve nutritive value of candy and provide opportunities for developing new types of candy at reduced costs. The candy industry, however, did not become a significant outlet for whey solids until very recent years. One reason for the lack of interest in whey solids prior to 1952 was inadequate commercial sources for sweetened condensed whey. In addition, the powdered whey was not reliably good in quality. How-

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ever, today sweet dry whey of excellent quality is available in nearly unlimited quantity.

Last year, at the National Confectioners Association Meetings in Boston, Massachusetts, Dr. L. F. Martin, of the Southern Utilization Research Branch in New Orleans, gave a comprehensive report on the findings they obtained from their experimental work on the use of whey solids, both sweetened condensed and powder form, in the production of high quality caramel. During this past year, Dr. Martin's group have continued their research program on whey solids concentrating their studies to its functional value in fudge. Complete reports on their studies describing how to produce excellent fudge with whey will be published and submitted to all N C A members.

Sweet dry whey contains approximately 72% lactose, which is roughly 50% more than in nonfat dry milk. Because lactose plays such an important role in development of full caramel flavor, you can expect more caramel flavor from sweet dry whey than when any other dairy product is used.

R. J. Ramsey<sup>4</sup> discussed the role of lactose and other reducing sugars in caramelization and sugar-amino acid condensation reactions. He pointed out the need of controlling this condensation reaction to produce desirable flavors and prevent strong, bitter off-flavor and objectionable colors.

Lactose also is a flavor carrier and emphasizes a flavor. It has the ability, too, to increase richness of flavor. Lactose produces incomplete crystallization in fudge and thus prevents graining out. Consequently, freshness of flavor and softness of fudge

are maintained appreciably longer during storage. Caramels made with sweet dry whey melt down faster in the mouth and do not stick to the teeth and roof of the mouth as readily. Thus it produces a better eating piece. Shelf life also is increased when sweet dry whey is incorporated in caramel formulas.

The protein present in sweet dry whey is largely of the albumin type. As mentioned earlier, this particular type of protein gives smoothness to the body and texture of candies. However, it does not have the structure building characteristics of casein protein. Accordingly, for firm caramels, for example, sweet dry whey usually does not exceed 40% of the milk solids not fat. For softer caramel, from 50 to 65% of the milk solids not fat can be sweet dry whey. For caramel or butterscotch toppings, sweet dry whey can constitute all of the milk solids not fat. In fudge, much higher levels of whey solids can be incorporated than nonfat milk solids without altering its characteristic body. You will be interested in tasting and examining some caramel and fudge made with sweet dry whey. Samples of both products have been made available to you and the formulas used are given in the mimeographed sheets passed out to you. These products were prepared commercially, using conventional equipment. Your comments, after checking over the formulas and tasting the candies, would be deeply appreciated.

#### Lactose or Pure Milk Sugar

As mentioned earlier, pure milk sugar is only one-sixth as sweet as cane sugar. Accordingly, it is finding a substantial market in the candy industry for reducing the excessive sweetness of items such as fondant, icings, and other high sugar bases. You will recall its flavor holding and carrying capacity, and therefore can appreciate that it will enhance the flavor of the candies in which it is used. You will want to examine the samples of creams passed out to you. It is also an excellent pigment absorbent and, in colored icings or candies, it will definitely retard bleaching, fading and streaking.

Lactose can be used to control crystallization of sugars in fudge, fondant, and candies containing high levels of nonfat milk solids or sweet dry whey. For this function, finely pulverized lactose is used.

#### Whey Whipping Agent

A whey whipping agent has been developed which, when used to replace from one-third to one-half of the egg albumin in your formulas, will result in an excellent flavored finished product with remarkable storage properties. Its effect on shelf-life is particularly dramatic in high moisture confections such as base mazetta, nougat cream, marshmallow cream, and fountain toppings. It produces a shorter, more tender product. This is especially advantageous when used along with gelatin because it will allow you to use the optimum amount of gelatin for setting-up characteristics and keeping quality while retarding rubberiness and maintaining shortness during storage.

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## The use of chocolate as a flavor

by NORMAN KEMPF  
Walter Baker Division

**D**uring the past 10 meetings of this group a great deal of attention has been given to the subject of Chocolate Coatings, their preparation and application to centers. There is, of course, another very important use for chocolate, and that is as a flavor for various types of candies. Chocolate flavored ice creams, dairy drinks, and baked goods play a big role in the Dairy and Baking Industries, but chocolate flavored candies have not been exploited as fully as chocolate coated candies.

When chocolate is used to flavor other candies a number of different forms may be employed, depending on the material to be flavored and the type of flavor desired.

The very best results flavorwise are obtained by the use of a good chocolate liquor, made from selected flavor beans. Speakers at earlier conferences have described the differences which the Chocolate Industry recognizes between the so-called "flavor" beans, produced by trees bearing the romantic names of "Criollo", "Trinitario", and "Cacao Nacional", and the so-called "base" beans produced by "Forastero" or "Colobacillo" trees. These "flavor" beans are richer in the aromatic chemicals responsible for chocolate flavor. Even though they cost more than the "base" beans, they deliver more and better flavor per pound, and therefore make ideal components of the chocolate which is being used to flavor something else. Certain types of flavor beans, such as Caracas and Porto Cabello may be used by themselves in liquors used as flavors, but as a general rule better results are obtained by blending types of these beans, balancing off with a small proportion of well fermented "base" beans.

Another vital factor in selecting cocoa beans for use in liquor which is to be used as a flavor, is the degree of fermentation. As described to you at earlier meetings chocolate flavor appears during the roasting of cocoa beans and is formed as a result of the action of heat on certain flavor precursors. These precursors in turn do not exist in

the raw bean as it grows on the tree, but are created in the bean during the tropical fermentation process. Because this fermentation plays such an important role in the development of flavor, the degree of fermentation is one essential factor in determining the amount of flavor which the beans will deliver when roasted and ground to liquor for flavoring purposes. Unfermented or poorly fermented beans are just so many "freeloaders" in a liquor intended for this purpose. In selecting a liquor for flavoring purposes, price is a poor criterion, what you are paying for is flavor, so select the liquor which gives the best flavor; and spend your money wisely.

The incorporation of liquor as a flavor in candy batches presents no problems. If the liquor is melted when added, it mixes into the batch easily.

In the case of hard candies, liquor is best incorporated with the batch on the slab, rather than being cooked with the batch.

In many cases, either because the fat content of chocolate liquor is a handicap, or for economic reasons, we must obtain our chocolate flavor from cocoa powder. Cocoa powder is the product resulting when the non-fat solids of chocolate liquor are separated from the fat by hydraulic pressure, and the resulting presscake is pulverized and sifted to the desired particle size. Cocoa powders are available with various fat contents from 24% down to -1%, and in a great range of colors and flavors. Generally speaking there are two major divisions, "natural" powder, pressed from untreated liquor, and "Dutch Process" powder, pressed from alkali treated liquor, or liquor ground from alkali treated nibs. Unfortunately, cocoa powder will not give as rich or aromatic a flavor as the chocolate liquor from which it is produced. Something beside fat is lost in the pressing operation. The finer aromatic notes of the flavor seem to be the first to go, whereas the stronger bitter notes remain.

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cause the free acids remaining from the tropical fermentation are partially neutralized. The neutralization of these acids eliminates a harsh or sour flavor note normally contributed by the acids. Alkali processing is regulated by the Federal Standards for chocolate products, which enumerate the alkalies which may be used, and set limits on the quantity of each. The limit is defined as 3 pounds of Potassium Carbonate per 100 pounds of cacao nibs. The alkalies permitted by the Standards are Bicarbonate, Carbonate, or Hydroxide of Sodium, Ammonium or Potassium, or Carbonate or Oxide of Magnesium. In the case of other permitted alkalies, no more than the neutralizing equivalent of 3 pounds of Potassium Carbonate may be used. The processing can be carried out at several different points, on the beans, on nibs, on liquor or on cocoa powder.

A wide variation in the flavor and color of cocoa powders is possible because of the many variations in treatment available. Not only can bean blends be varied, but dutching chemicals, style of treatment, amount of water used, time and temperature of treatment, presence or absence of oxygen, amount of fat left in, can all be used for different effects, to meet every requirement of the user.

In the manufacture of cocoa powder the selected chocolate liquor is pumped into large filter presses equipped with hydraulic rams to squeeze the desired amount of fat out of the cake after the filtration cycle is completed. The cake is then discharged from the press, pulverized and finally sifted. While the sifting operation formerly consisted of passing the pulverized cocoa over silk or metal screens, most cocoa is now sifted by the use of various types of air classifiers, which depend upon centrifugal force to throw the larger particles a greater distance than the smaller ones, while the powder is suspended in a rotating stream of air. The degree of fineness can be controlled by regulating the point of separation of fines and "tailings", or by controlling the speed of the air stream. Before or during this operation steps must be taken to temper and freeze the fat in the powder. If the fat is left crystallized in an unstable crystal form, the latent heat liberated by subsequent recrystallization will cause the powder to lump and lose its free flowing characteristics.

Generally speaking, the higher the fat content the better the flavor of any given cocoa. The fat acts as a flavor vehicle in transmitting chocolate flavor to the taste buds. The basic water soluble components of the flavor increase the intensity as the solids content increases.

Pressed cocoas are available from 22-24% down to 9-11% fat. For lower fat contents (below 1%) solvent extraction is needed, and, of course, this further depletes the aromatic flavor of the original cocoa, while concentrating the bitter components.

Because of the presence of cocoa butter in the powder, cocoa powders are subject to bloom, if the butter is caused to recrystallize. This bloom affects the dry color of the powder causing it to "fade" or lighten in color. It is purely a physical change, as the color can be restored by retempering of

the powder, and is restored automatically when the powder is put into suspension in water or in any candy mix. Because of this fact, cocoa color comparisons should be made in hot water suspension, as the apparent dry color of the powder is not a reliable basis for conclusion. For some purposes of use, particularly where the cocoa will be heated in the presence of milk solids, a hot milk suspension can be used for color comparisons. In this way any possible effect of the milk solids on cocoa color can be foretold, and a better decision made in selecting the right cocoa for the finished products.

When chocolate or cocoa powder is used to flavor other candies, the quantity needed to obtain a good flavor balance depends upon the relative sweetness of the product to be flavored.

One example is chocolate fudge. This candy provides an excellent testing ground for observing the flavor contributions of liquor versus powder.

In order to illustrate the flavor difference, two lots of chocolate flavored fudge have been prepared and samples are now available for your appraisal. One sample is flavored with liquor prepared from flavor type beans, in this case Caracas. The amount used is 11% of the total formula. The other sample is made from the same formula except that the Caracas liquor has been replaced with a cocoa powder made from base beans with added vegetable fat to replace the cocoa butter content of the liquor. In each case, the cocoa solids content of the formula is the same.

You will note that the color of the powder fla-

vored fudge is darker, because of the darker color characteristics of the base beans. However, I am sure that on tasting these two samples you will become aware of the instant burst of chocolate flavor in the liquor flavored samples, as compared with the flatter flavor of the cocoa powder. While both are pleasant tasting pieces of fudge, the extra something in the liquor flavor carries that "come back for more" pull with it.

Because of the unfavorable action of fat on the surface tension of solutions of most whipping agents, the flavoring of nougat is best accomplished by adding the flavor in the form of cocoa powder to the batch after whipping it to the desired consistency.

There are a number of other flavors which can be used to complement chocolate when it is used as a flavor. The most important of these is vanilla, which goes particularly well with chocolate. Coffee and peppermint also make pleasing combinations with chocolate in candies.

In conclusion, I would like to emphasize once more, the importance of selecting chocolate flavor with great care. While there is no question but that a Ford will give you satisfactory transportation from here to there, the same ride in a Cadillac is oh so much nicer. When the flavor component of a batch is such a small part of the total batch, and flavor is the most important characteristic of your candy, and is in fact largely responsible for your customers acceptance of that candy, pick the flavor which will induce that customer to come back for more of the same.

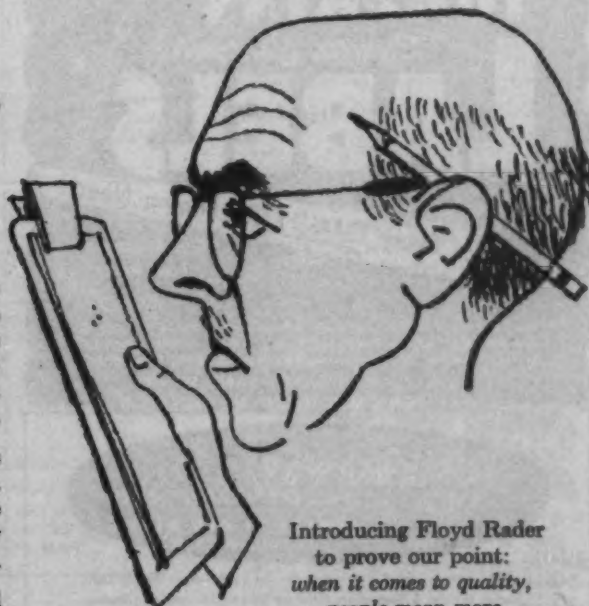
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50" two cylinder Werner Beater.  
1000 lb. Werner Syrup Cooler.  
200 lb. to 2000 lb. Chocolate Melters.  
Simplex Gas Vacuum Cooker.  
Simplex Steam Vacuum Cooker.  
600 lb. Continuous Vacuum Cooker.  
Form 3 and Form 6 Hildreth and Factory Model American Pullers.  
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FOR SALE: Simplex Gas Fire Cooker, Racine Super Duplex Sucker Machine, Wrap-Ade Pop Wrapper, 3x6 Thos. Mills Slabs, 100-lb. Puller. Box 1264 The MANUFACTURING CONFECTIONER.

FOR SALE: Rose 500, cylindrical piece 1 1/2" x 3/4"; GH-2 Package Machinery Wrapper; LP-3 Sucker Wrapper; 600-lb. N.E. Continuous Cooker. Box 1262 The MANUFACTURING CONFECTIONER.

FOR SALE: Three Package Machinery LP Pop Wrapping Machines, good condition. Subject to prior sale. Box 475 The MANUFACTURING CONFECTIONER.

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- 1—Werner 35 gal. Cream Breaker with geared head motor.
- 2—3 speed Hobart 80 quart Mixers.
- 2—Century and Triumph 30 quart Mixers.
- 13—Open Fire Kettles.

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- 1—Lynch Wrapper with Electric Eye, Model PB, cardboard roll feed with motor.
- 1—Lynch Wrap-O-Matic Wrapper, Model LPB, with Electric Eye.
- 1—Hayssen Model 7—11 Wrapper with Electric Eye and motor.
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- 1—Miller Cellophane Sheet Cutter and Wrapper, motor driven with motor.
- 1—Amsco Bag Sealer with motor.

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- 2—Simplex Steam Vacuum Cookers.
- 1—Hildreth Form 3 Puller with motor.
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- 5—3 ft. x 8 ft. Cooling Slabs.
- 1—Lot Slate Slabs.
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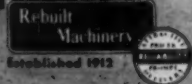
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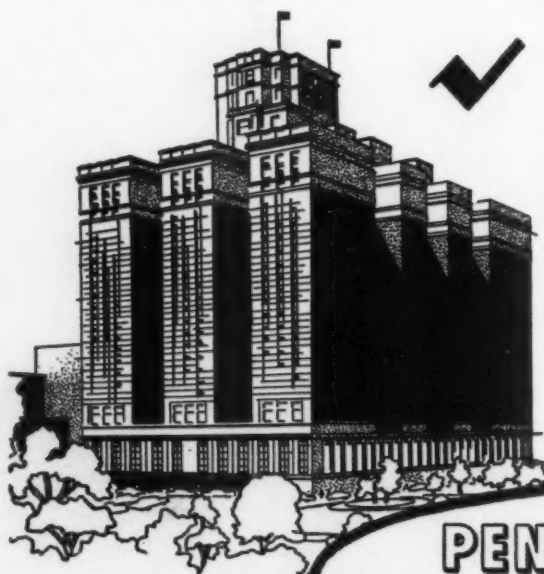
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These pictures record some of the good fellowship enjoyed by members and guests at the AACT testimonial meeting for Edward Heinz, the retiring secretary of the Chicago section.

(1) Joe Greninger, Page Miller, Ray Mikkelsen, George Heath, Bob Thomas and Cal Rutt. (2) Retiring chairman Pat Cosler of the Quartermaster with his plaque, and honored guest Ed Heinz holding his gift from the section. (3) John Carter of Durkee with past chairman Ed Seibert of Meissner Engineers, and Roy Korlage of Ambrosia Chocolate. (4) Jack Toll of Durkee with Bob Burke, Burke Products and Harry Best of Anheuser-Busch. (5) Ray Avery of Leaf talking with Pat Cosler of the QM. (6) New chairman of the Chicago section Herb Knechtel of Knechtel Laboratories Johnny Johnson of Walter Johnson and Pat Cosler.



(7) Si Schnitzer of Leaf, Dr. Rimpilla of Brach and Bill Holtz of Cracker Jack, three past chairmen of the Chicago section. (8) Earl Crandell of C&C Candies. (9) Honored guest Ed Heinz with his token of appreciation from the section. (10) Earl Peterson of Bunte with Frank Lyons of Williamson. (11) Howard Peper of Hubinger with Dr. Perrella of Ferrara Candy. (12) Fred Nelson of Nu Coat Bon Bon buying a round with Jim Shea of P. R. Dreyer looking over his shoulder. (13) Howard Dellard of Atlas Powder, Sam Kostelny of Preferred Brands and Ken Gunther of Gunther Products. (14) Frank Voyda of Anheuser-Busch with Ernie Semersky of Bunte and Cal Rutt of Wolch Nut and Candy. (15) Wally Meyer and Bennie Accardi of Stevens Candy with Guenter Krellwitz of Robert A. Johnston.



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# doodlings

—by tom sullivan

THIS SURE IS THE LIFE! But if you think so, too, then both of us are in disagreement with more than a few ageless characters quoted a while back by Albert Verney in the Chicago "Tribune."

According to Verney, life to Marcus Aurelius is . . . a battle; to E. V. Cooke, a hollow bubble; to Robert Browning, an empty dream; to Shakespeare, a walking shadow; to John Gay, a jest; to John Masefield, a long headache in a noisy street.

Oh, if only in their day these fellows had the multifarious benefits of automation!

W. L. HUDSON passes the word that "gossip doesn't go without saying."

WRITING in "Forbes," J. H. Boetcker offers the following as the names of the seven *Mischievous Misses* who are responsible for most of our troubles:

Miss Information, Miss Quotation, Miss Representation, Miss Interpretation, Miss Construction, Miss Conception and Miss Understanding.

He adds:

Don't listen to them. Beware!

IF YOU'RE a man who likes to keep posted, you're sure to know where to find all seven *Mischievous Misses* unveiled in one place.

LET'S TURN HERE to Luke Neely for one of the latest clues on how to tell a lady:

*She bristles at whistles.*

A STUDY conducted at New York University of 1000 adults found that 87% started developing the skills that they use in leisure time before they were 12 and 67% before they were 10. Or so says "Parents Magazine."

Now you can understand why there are so many young heads on old shoulders.

FOR THE NEXT few months weather will be more of a topic of conversation than at any other time of the year. So, you might be interested in what Howie Lasseter has to say on the subject:

"America is still a free country. Here, if you don't like the weather, you can move to another place and not like it there."

IT'S SURPRISING to note how many captains of industry



and commerce have more or less suddenly become enamored of kids—other people's mostly—and what they mean to the future of business. Yet some hoary old followers of Malthus will pop up every once in a while to insist that come the year 2000 and there won't be enough grub for anybody, let alone the underprivileged.

IF HISTORY teaches one lesson above another, says Arthur S. Maxwell in "Signs of the Times," it is that leadership passes from nations whose morals become corrupt.

This, of course, is equally true of political parties, industries, labor unions, trade associations, or what have you.

IT HAS COME TO PASS that science is now developing cheaper substitutes for expensive substitutes for the modestly priced McCoy. For instance, dresses from bagasse for dresses from rayon for dresses from silk. But as an old pants presser once told us, the cost of a garment is not so much in the material as in the workmanship.

CHARACTER BUILDING is done by piecework, says E. I. Royle.

Too bad so many find the rates unattractive.

ROBERT W. MCINTYRE writes in "Wesleyan Methodist":

"If all the people who go to sleep in church were laid end to end—they would be more comfortable."

BEFORE WE SIGN OFF, we want to tell you this! Recently we came across a periodical titled, "One Man's Opinion," which we shivered through from beginning to end in one sitting.

Now if you value this doodler's opinion of literature with a purpose written in what we wouldn't hesitate to call incomparable prose, you'll dig up a half dollar for the February-March issue of this periodical and mail it pronto to Robert Welch, Inc., Belmont 78, Mass. With your name and address, of course.

Then, having read the issue mentioned, we'll bet you even money, you'll want to throw all your weight—moral and financial or, in any event, all your moral weight—and at least five bucks of your financial worth into 15 consecutive issues of this particular periodical.

Remember, it's "One Man's Opinion." But what a man, what a writer, and what an opinion!

J. P. Manning Co.'s John Griffin appraised it thus: "Come the revolution and I imagine Bob Welch will be on the prescribed list." Another important business executive said of it: ". . . extremely interesting, and alarming, too!" We could add another dozen comments in much the same vein but the important thing is—

Remember, "One Man's Opinion" and be sure to get it and read it.

now...handy smaller size...new features

# Tote Boxes

by WEAR·EVER

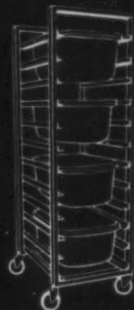


us at Booth 508, Confectionery Industries Exposition, June 10-13, Conrad Hilton, Chicago, Ill.

Smooth, rounded,  
easy-to-clean  
corners

#24 Over-all Size:  
23 3/4" x 17-1/16" x 10 3/8"

Exclusive  
Open Bead  
design



24 avail-  
able without handles  
to fit Cres-Cor Pan Rack

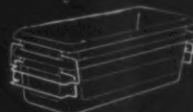
Strong, smooth  
one-piece handle



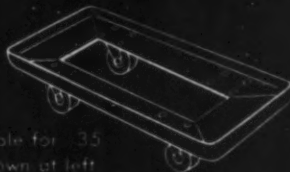
#35 Over-all Size:  
34 3/16" x 16 7/8" x 12"



Stack  
when filled



Nest  
when empty



Dolly available for #35  
shown at left

you asked for it...a smaller version of the famous Wear-Ever  
Tote Box. It's our new #24, shown at top in the above  
illustration, and it's available now.

We've designed it particularly for you whose needs call for  
lighter, smaller, easier-to-handle container. It is available  
without handles, to fit perfectly in a Cres-Cor pan rack.

This new box incorporates the same quality construction  
features as our standard size box—special extra hard wrought

Wear-Ever Aluminum Alloy, sanitary open bead and extra  
strong, double-embossed bottom.

Like its big brother, shown in the smaller photo, this new  
box stacks when full, nests when empty and is available with  
your identifying imprint on side or end, if desired.

For full information on our complete line of food handling  
items, call your local Wear-Ever man, or send coupon below.

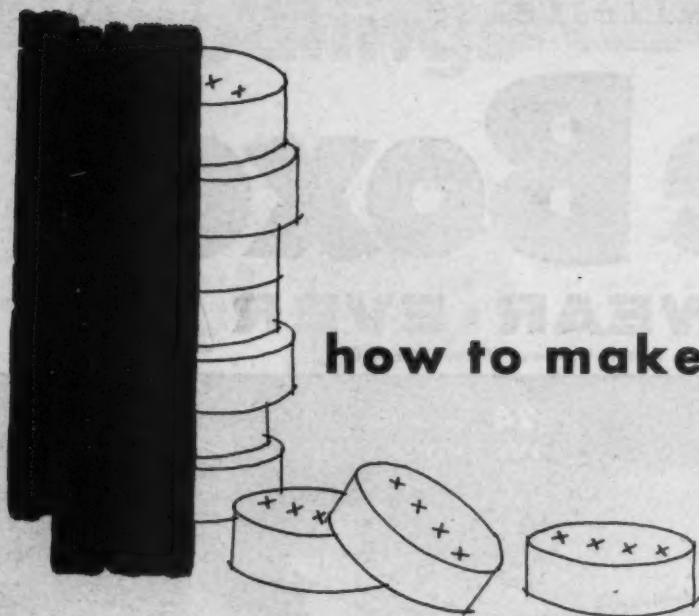
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ALUMINUM  
UTENSILS**

THE ALUMINUM COOKING UTENSIL COMPANY, INC.  
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• other handling equipment.  
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• NAME.....  
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• TITLE.....  
• Fill in, clip to your letterhead, and mail today.  
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Keeping customers' pockets lined with your candy products calls for ingredients of consistently high quality. Clinton corn syrup always gives your candy the right body and texture — helps prevent crystallization, too. Other Clinton products you can bank on are starches and *Clintose* brand dextrose. Including these ingredients in your formulas is like adding Clinton's years of experience to your own.

Make a sounder product — win more satisfied customers. See how it pays to keep your ingredients on the Clinton standard.



## Quality products

...and remember

- technical service in connection
- with your specific problems
- is available without obligation.

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CLINTON, IOWA

*Our 50th Anniversary Year 1907-1957*



